Safety Maintenance and Production

EST. 1901 AMERICA'S PIONEER MAGAZINE IN ITS FIELD

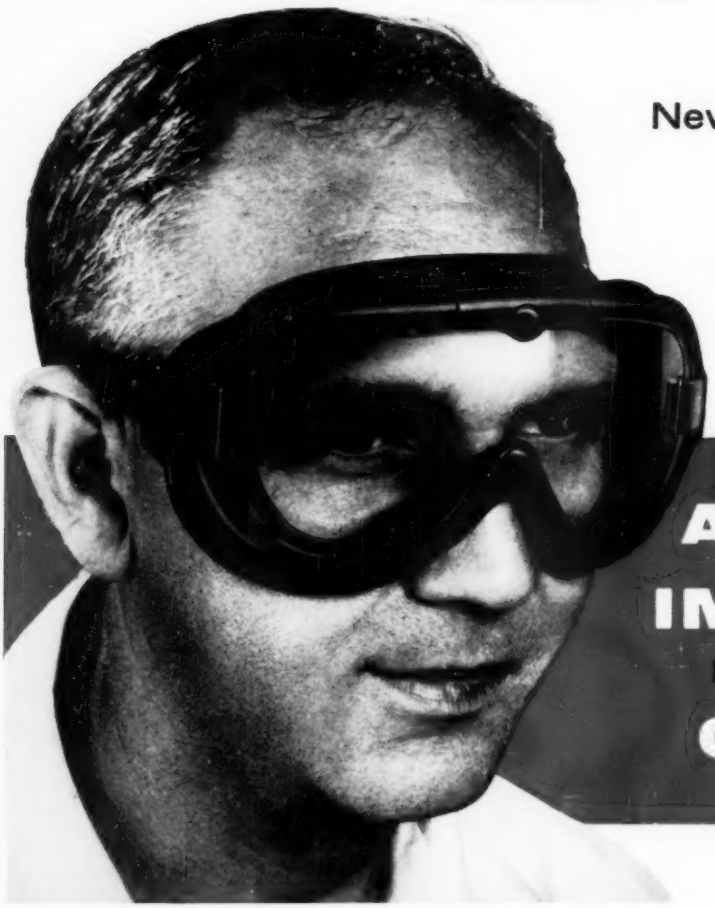
IFTY CENTS FEBRUARY, 1954

Safety Eyewear

Increased Ventilation!

New Screen Vents!

No Chemical Splashes can reach the eyes!



AO's NEW IMPROVED DUST and CHEMICAL GOGGLE

We've made a good goggle even better with the newly designed all-rubber "700A." Ventilation efficiency has been stepped up more than two times by using new rubber grommets or vents equipped with chemically resistant stainless steel fine mesh screen. These vents are easily cleaned and are individually replaceable. They do not become clogged with dust in heavy exposures as quickly as the cloth vents used previously. *Air keeps coming through longer*. What's more, this increased ventilation reduces fogging of lenses to a minimum when goggle is worn in hot and humid places . . . and the fine screen grommets prevent any chemical splashes or sprays from endangering the eyes at any time.

YOUR NEAREST AO SAFETY PRODUCTS REPRESENTATIVE CAN SUPPLY YOU.

Quick Facts

USES — For work on acid lines, storage batteries, metal plating baths, cleaning and degreasing, foundry shakeout, railroad car cleaning, cleaning coal-handling equipment, work in ships' holds . . . in railroading over dusty runs.

FRAME — Molded from non-irritating, acid-resistant neoprene. Airtight fit helps prevent acid or dust leakage. Bridge and other face-contacting edges are very comfortable.

HEADBAND — Rubber . . . extra wide, easily adjustable.

LENS — Large impact-resistant acetate, easily replaceable. Provides exceptional wide-angle vision. IT CONFORMS TO HIGH SAFETY AND OPTICAL STANDARDS.

NOTE: Goggle may be worn over personal glasses

American Optical
SAFETY PRODUCTS DIVISION

The SAFETY ZONE

Keep your workers in the Safety Zone with AO Safety Equipment

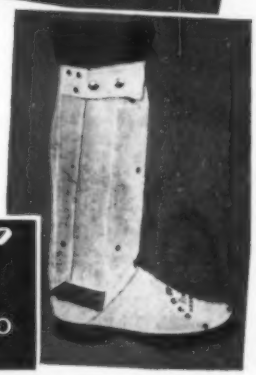
SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

(For further details, use Key # O-1 on free Inquiry Card on page 75)

MADE TO HIGHEST STANDARDS SINCE 1924

GARDWELL

30th ANNIVERSARY



Highest Quality and Service was the watchword of Safety Clothing & Equipment Company when it was founded 30 years ago. IT STILL IS.

Whether the material is chrome leather, asbestos, fireproofed duck, synthetic, rubber or whatever it is, it has always been our policy to use the best — And to fabricate it as strongly as possible so that every article will give utmost service.

The line of safety clothing and equipment is complete with garments for Head to Foot Protection and many items of safety equipment.

Send for Complete Catalog

Dealer Inquiries Invited

GARDWELL Products

Safety CLOTHING AND EQUIPMENT Co.

1990 EAST 69TH STREET · CLEVELAND 3, OHIO

PHONE HENDERSON 2-0400

(For further details, use Key # O-2 on free Inquiry Card on page 75)

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...breathe cool, fresh AIR — not oxygen!

Don't waste valuable minutes at the scene of the emergency for your breathing equipment to start generating. Use the Scott AIR-PAK and you are ready to go in seconds. The AIR-PAK supplies all the cool, fresh air you need. You can go directly to the trouble source without concern for the concentration of gas or vapor because you are absolutely independent of surrounding atmosphere with the AIR-PAK.

No complicated training or practice is necessary. Cool air operation prevents fogging. Using air instead of oxygen inspires confidence in the most inflammable atmosphere. Clear, convenient gage assures dependable check on air supply.

If you would like more information on the world's safest self-contained breathing equipment write today!

SINCE 1932 Scott FOR SAFETY—FOR SERVICE

SAFETY EQUIPMENT DIVISION

SCOTT AVIATION CORP.

217 ERIE STREET LANCASTER, N. Y.

Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 15 West 57th Street, New York 19, New York

(For further details, use Key # O-3 on free Inquiry Card on page 75)

THE FUTURE SHOWS

Dayton, Ohio *Feb. 10*

Second Annual Miami Valley Safety Conference (Biltmore Hotel). Marvin Purk, Dayton Chamber of Commerce, Biltmore Hotel, Dayton 2, Ohio.

San Francisco, Calif. *Feb. 11–12*

California Industrial Safety Conference. (Palace Hotel). A. C. Blackman, Chief, Division of Industrial Safety, 965 Mission St., San Francisco 3, Calif.

Louisville, Ky. *March 7–9*

Southern Safety Conference & Exposition (Kentucky Hotel). W. L. Groth, Executive Director, P. O. Box 8927, Richmond 25, Va.

Philadelphia, Pa. *March 10–11*

Twentieth Annual Philadelphia Regional Safety and Fire Conference and Exhibit (Bellevue-Stratford Hotel). Walter W. Matthews, Managing Director, Philadelphia Chamber of Commerce Safety Council, Architects Building, 17th and Samson Streets, Philadelphia 3, Pa.

Indianapolis, Ind. *March 17–18*

Seventh Annual Central Indiana Safety Conference and Exhibit (Claypool Hotel). Indianapolis Safety Council, 320 North Meridian St., Indianapolis 11, Ind.

Boston, Mass. *March 22–23*

Thirty-third Annual Massachusetts Safety Conference and Exposition (Hotel Statler). Edgar F. Copell, President, Massachusetts Safety Council, 31 State Street, Boston 9, Mass.

Dallas, Texas *March 29–30*

Fifteenth Annual Texas Safety Conference (Baker Hotel). E. B.

(Continued on page 4)

Magic Lens Tissue
T.M. REG. U.S. PAT. OFF
SILICONE TREATED
American industry's swing to MAGIC LENS TISSUE (Silicone treated) is one of the greatest success stories of the Safety field. Each sheet over 50% larger than usual. Yet Magic costs you less. $8.40 per Carton (6 refills per carton). The compact Dispenser is only $2.50.
OR THIS FOR
GRIME - GRIT - PLASTICS
Magic
Lens Cleaning & Anti-Fogging Fluid
Heavy Duty
Magic
LENS CLEANING STATION
Just touch the top and PRESTO!—the locked-on pressure can does the rest. No pump. No mess. No bottles or plungers to stock.

READ THIS AND SAVE SAFETY MONEY

MAGIC LENS TISSUE won its way throughout American industry by superb quality plus proper pricing. The biggest silicone-treated sheet, the best and a bargain. That's what did it.

Science's answer to foul sight, it leaves an invisible coating of miracle silicone which protects lenses; gives and preserves sparkling clarity, makes cleaning and polishing simple, faster, better, brighter, more lasting.

The compact Dispenser is equipped with adhesive Mounting Strips that absolutely hold to machinery, steel beams or plaster walls without screwing or drilling.

So, now comes our HEAVY DUTY Cleaning Station for mines, foundries, heavy-grit areas or where ANTI-FOG protection is necessary—on plastic goggles, safety shields or any eyewear.

First we developed today's finest cleaning and anti-fogging compound, and proved its superiority by government tests in one of the world's leading laboratories. Then we Pressure-packed it. About 1,400 applications per can. Goes twice as far as old-fashioned pump-type cleaner in old-fashioned bottles. This cuts your maintenance 75%.

No extra attachments. No double inventory. Nothing to refill and priced at only $12.50 per carton of twelve 12-oz. cans. You may not need the anti-fogging property in the fluid. *But you pay nothing extra for it.* And it's always there if you need it.

Indestructible, 20-gauge steel Dispenser locks can in place, protruding and unobstructed where it can be used best. No pilferage possible. So compactly and ingeniously built, including ample space for tissue disposal, that whereas ordinary cabinets cost ten or twelve dollars this superior cabinet costs only $5.95. Releases each sheet only 1-by-1, not in bunches, and enormously reduces waste. *Ask us to exchange this dispenser for whatever you have and you will see.*

The paper, not silicone-treated, is our superb, super-strong, wet-strength tissue. Naturally, no scratching on plastics or anything else, and no lint. Here again notice the great saving. Instead of a few sheets in little boxes, Heavy Duty carton contains 18 giant refills (760 jumbo-size interfolded sheets 8" by 4¾") at only $11.60 per carton. All prices F.O.B. our plants.

No wonder safety men and plant supervisors who first see this Heavy Duty Station say "Well, I'll be. . . ." Then they compare advantages and prices, and buy. For all this does not cost them a penny more. In fact, it costs them a great deal less.

Ask us or your Safety Jobber to exchange your old installations today, or order anew—now!

The Silicone Paper Company of America, Inc.

General Offices: 75 E. 45th St., N.Y. 17, N.Y.

(For further details, use Key # O-4 on free Inquiry Card on page 75)

Specialists in Floor Safety Absorbents

Note that a cigarette, continuing to burn itself out, has no effect whatsoever on an oil-soaked pile of ZORBALL!

Wyandotte ZORBALL proves *skidproof, FIREPROOF!*

SAFETY is FIRST with ZORBALL!

Wyandotte ZORBALL prevents skidding, slipping—and gives maximum protection against fire hazard!

Recent impartial laboratory tests have borne out the noncombustible nature of ZORBALL. Samples of ZORBALL, in these exacting tests, would not burn or even evolve combustible vapors!

Another sample of ZORBALL, saturated with cutting oil, burned for only one second after the test flame was removed. The flame was only ⅛ inch high and did not spread beyond the area heated by the test flame!

ZORBALL will also stop slipping and skidding on icy steps, walks, loading docks, roads, etc.

ZORBALL resists breakdown . . . refuses to cake or mud even under heavy traffic conditions . . . is the safest, lowest "use-cost" floor absorbent known. Call in your Wyandotte representative for proof of ZORBALL'S safety and economy. *Wyandotte Chemicals Corporation, Wyandotte, Mich. Also Los Angeles 12, Calif.*

CLEANING THE WORLD

®REG. U.S. PAT. OFF.

Largest manufacturers of specialized cleaning products for business and industry

Wyandotte CHEMICALS

Helpful service representatives in 138 cities in the U. S. and Canada

(For further details, use Key # O-5 on free Inquiry Card on page 75)

Future Shows (Cont'd)

Tilley, Texas Safety Association, Inc., 830 Littlefield Bldg., Austin, Texas.

Pittsburgh, Pa. *March 30–31*

Twenty-ninth Annual Western Pennsylvania Safety Conference and Exhibition (Hotel William Penn). Harry H. Brainerd, Executive Manager, Western Pennsylvania Safety Council, 605 Park Bldg., Pittsburgh 22, Pa.

New York, N. Y. *April 6–9*

Twenty-fourth Greater New York Safety Convention and Exposition (Hotel Statler). George E. Decker, Lincoln Building, 60 East 42nd St., New York 17, N. Y.

Charleston, W. Va. *April 14–16*

Twentieth Annual West Virginia Safety Conference. Charles Hopkins, West Virginia Safety Council, 316-17 Masonic Office Bldg., Charleston, W. Va.

Columbus, Ohio *April 20–22*

Twenty-fourth Annual All-Ohio Safety Congress & Exhibit (Deshler-Hilton Hotel). James H. Fluker, Div. of Safety & Hygiene, Industrial Commission of Ohio, Columbus 15, Ohio.

Detroit, Mich. *April 20–22*

Michigan State Safety Conference (Sheraton Cadillac Hotel). Jerry Moore, executive secretary, Corporate Service, Inc., Detroit, Michigan.

Buffalo, N. Y. *April 20–22*

Fourteenth Annual Western New York Safety Conference and Exhibit (Hotel Statler); executive secretary, Eugene C. Hohlstein, Blaw-Knox Co., Buflovak Equipment Div., 1543 Fillmore Ave., Buffalo 11, N. Y.

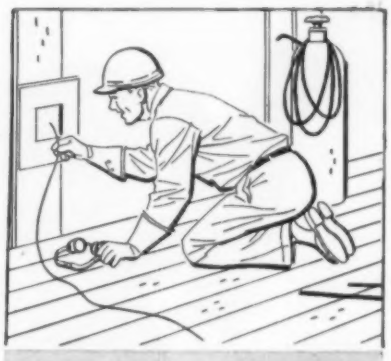
Fort Wayne, Ind. *April 27–28*

Northeastern Indiana Safety Conference & Exposition. Ivan A. Martin, manager Fort Wayne Safety Council, Chamber of Commerce of Fort Wayne, Fort Wayne 2, Ind.

"It sounded like an Explosion going off in my head"

said John W. Stark, Ironworker, employed at a large power plant construction project, by a subcontractor of Dravo Corporation

1. "The day it happened, I was brazing a plate to a copper wire beneath the turbine floor of the new power station.



2. "When I finished, I took off my goggles, turned my Skullgard around, and bent over to inspect the job.

3. "I just started getting up when something smashed into my Skullgard. It sounded like an explosion going off in my head.

4. "I was stunned by the blow, but the real shock came when I saw the steel chipping bar sticking in the Skullgard."

. . . Mr. Stark picked up the Skullgard that had toppled off, and with the bar still in it, walked to the Dravo dispensary on the job site. The nick in his scalp was treated, and as an extra precaution, Dravo took an X-ray of his head. He was back on the job in two hours.

There are good reasons why the M.S.A. Skullgard has what it takes to turn *accidents* into *incidents*. Steel wire screen reinforcing in the crown assures an extra margin of protection against "dead center" hits. High-strength, one-piece laminated plastic dissipates the force of the impact to safeguard the head, neck and spine of the wearer from the full force of the blow. Engineered head bands cushion the blow, permit non-slipping adjustment that means accurate fit. And M.S.A. Skullgards have the comfort-qualities that encourage full time hat use. Our bulletin gives complete details. Write for your copy.

SAFETY EQUIPMENT HEADQUARTERS

Call the M.S.A. man on your every safety problem . . . his job is to help you.

MINE SAFETY APPLIANCES COMPANY

201 North Braddock Avenue, Pittsburgh 8, Pa.

At Your Service: 76 Branch Offices in the United States

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Toronto, Montreal, Calgary, Edmonton, Winnipeg, Vancouver, New Glasgow, N.S.

Representatives in Principal Cities in Mexico, Central and South America

Cable Address "MINSAF" Pittsburgh

(For further details, use Key # O-6 on free Inquiry Card on page 75)

Kangaroo

...pretty soft for you!

Stock No. 1603

There are thousands of "tender feet" in industry—men whose feet just can't take the tough materials and the heavy construction that make regular safety shoes stand up on the job. So they refuse to wear safety shoes at all. But there IS one leather that's strong enough to give satisfactory service under any ordinary conditions—soft enough to pamper the tenderest feet—GENUINE KANGAROO! It has been a favorite for over half a century in shoes sold for comfort alone. And it makes the gentlest safety shoe ever devised for sensitive feet. Buy it—show it—to the man who "won't wear" regular styles and leathers.

LEHIGH
SAFETY SHOE COMPANY
ALLENTOWN, PA.

(For further details, use Key # O-7 on free Inquiry Card on page 75)

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EST. 1901

VOL. 107, NO. 2 FEBRUARY, 1954

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AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

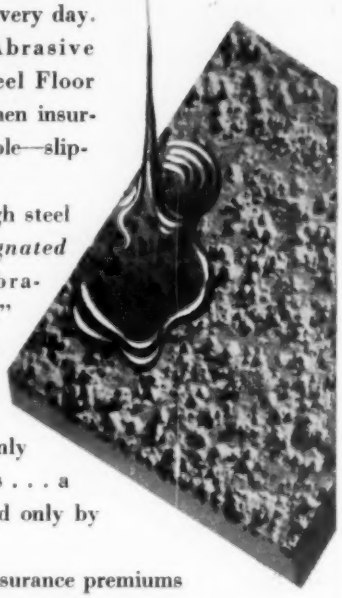
SPLASHED WITH OIL . . .

ALGRIP

still remains Non-Slip!

It occurs every day. ALGRIP Abrasive Rolled Steel Floor Plate is installed—then insurance premiums tumble—slipping accidents stop.

The reason is tough steel floor plate *impregnated uniformly* with abrasive "grinding wheel" grain. Result: A truly non-skid surface that *stays* slip-proof, because wear only exposes new particles . . . a "safety extra" offered only by ALGRIP.



If your accident insurance premiums are too high, let ALGRIP bring them down. Mail this coupon today for the complete ALGRIP story. There's no cost or obligation

Underwriters' Laboratories approved for safety. Note depth and uniformity of abrasive grain.

A.W. ALGRIP Abrasive Rolled Steel Floor Plate

ALAN WOOD STEEL COMPANY
CONSHOHOCKEN, PA.

Please send Booklet AL-13 on how ALGRIP can cut costs and accidents:

NAME_____ TITLE_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

(For further details, use Key # O-8 on free Inquiry Card on page 75)

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Make every step safer with floor waxes improved with anti-slip LUDOX®

The luster of freshly waxed floors in your building need no longer be a warning of slippery footing . . . because floor waxes improved with anti-slip "Ludox" have a unique snubbing action that gives added traction underfoot. These wax films offer even greater hardness than ordinary waxes!

With all these extra advantages, properly formulated waxes containing Du Pont "Ludox" retain the basic properties of high gloss, water resistance and leveling. Why not see for yourself how much safer your floors can be? Call your maintenance man today and have him try a wax improved with anti-slip "Ludox." He can easily get a sample from your wax supplier.

If your supplier does not have wax containing "Ludox," write Du Pont, 4147-MP Du Pont Bldg., Wilmington, Delaware.

HERE'S HOW "LUDOX" ADDS SLIP RESISTANCE:

"Ludox" is colloidal silica—tough, transparent particles of minute size. Under the pressure of a footstep, these particles are pushed into the larger, softer wax particles. This action absorbs much of the foot's forward-moving energy—reduces the possibility of slips.

LUDOX®

COLLOIDAL SILICA

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

(For further details, use Key # O-9 on free Inquiry Card on page 75)

It's Safe to Say

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★ DESIGN FOR SAFETY

YEARS ago the editors of this publication recognized the relationship of automobile body design to the frequency and severity of motor vehicle injuries. In fact, for several years prior to World War II, we published an annual review of new body styles from the standpoint of accident-causing style factors based upon a comprehensive and entirely unbiased inspection at New York's Annual Automobile Show.

It is particularly gratifying, therefore, to note that automobile manufacturers and representatives of the insurance fraternity, as well as safety experts, are scheduled to meet later this year to discuss plans to "Make the Automobile Safer" (the title of our pre-war series).

Reference to motor vehicle accident and injury statistics convinced us long ago that *body* design not only left much to be desired in the interest of safety but in far too many cases certain designs actually contributed to the cause and severity of serious injury and mutilation of passengers. Following publication of our annual review, the editors of SAFETY MAINTENANCE obtained the cooperation of automobile manufacturers who were prompt to see the wisdom of safer body design. To this end, protruding "gadgets" were removed from many cars and the sharp, stiletto-type radiator ornaments were entirely redesigned to prevent impaling a hapless pedestrian in the event of sudden contact. Other improvements, based upon our recommendations, were made by body stylists who agreed with us that there was little point in maiming a large part of their potential market.

Another serious complaint on the part of the safety world is the subtle but dangerous emphasis upon the speed capabilities of certain cars. Rarely is the manufacturer guilty of the obvious by permitting his advertising department to stress "miles per hour." Rather, the indirect sales approach takes the form of unnecessary emphasis upon horsepower which in itself carries the implication of a tremendous speed potential inconsistent with modern safety thinking.

One insurance executive charges that "millions of motorists have been conditioned to a false feeling of perfect safety at high speeds as the result of the horsepower race indulged in by automobile manufacturers and by oil companies through super-fuel advertising."

He therefore appealed to both segments of the industry to "de-emphasize speed because it has cost thousands of lives already and will certainly cause many more highway deaths unless drivers learn that super-speeds and perfect safety are incompatible."

Obviously, this horsepower "race" must be ended in the public interest. The automobile industry therefore will be urged to curtail dangerous increases in horsepower under the influence of competition of foreign cars which are blatantly advertised with speeds of 80 to 100 miles an hour.

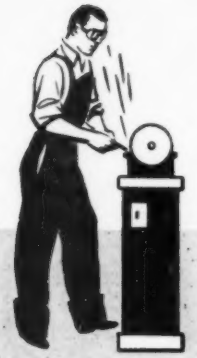
It goes without saying that such super-speeds are "as insane as they are unsafe on public highways and should be fought as contrary to public policy and public safety," according to the insurance official.

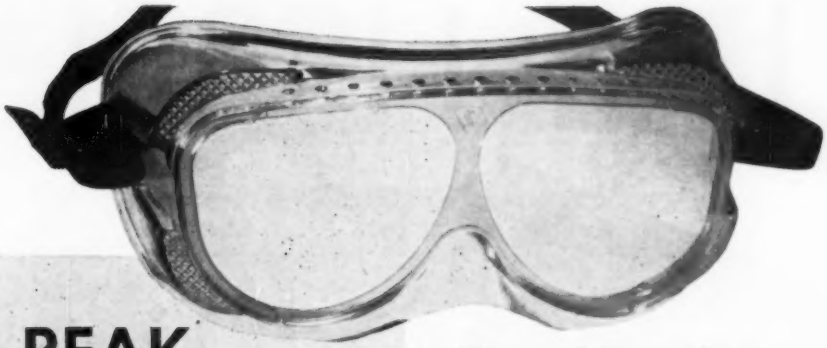
We can credit American manufacturers with the good sense of withholding from their advertising copy the high speeds of which their cars are capable, even though increased horsepower implies the ability of the car to travel much faster than vehicles of years ago.

In justice to the manufacturers, many leading companies take another view of horsepower advertising copy. L. L. Colbert, President of Chrysler, for example, states "we are not interested in a horsepower race. By increasing the horsepower of one engine from 180 to 225, we are not going for speed. Instead, we are emphasizing maneuverability and acceleration at a time when they are most needed, which means greater safety."

It would seem to us that a speed of 50 miles an hour is all that the average driver can safely handle, even on the most modern highway and under ideal conditions. Human reflexes have a "breaking point" and in many individuals, it requires a longer time for the brain to telegraph an order to apply the brake. Certainly, we know that the faster the speed, the greater is the traveling distance of the car before it can be brought to a stop. In that interval, far too many lives have been lost and too many human statistics have been entered into hospitals.

Here again, American cooperation can be a factor in saving life; the utmost cooperation of body stylists, manufacturers, drivers, the safety and insurance world and most emphatically the cooperation of advertising copywriters. H.A.





FOR PEAK WORKER COMFORT AND EFFICIENCY

Non-sparking all-acetate Bausch & Lomb Eyeshields are lightweight, comfortable, safe. Whatever the eye hazard, plan your protection from this comprehensive line of all-acetate cover-all and spectacle-type eyeshields. Bausch & Lomb controls all production—from start to finish—entirely within its own plant. Quality of materials and workmanship—and maximum economy of production—are insured.

BAUSCH & LOMB EYESHIELDS

BAL-guard Cover-all

One-piece snap-in snap-out lens exceeds U.S. Standards Bureau requirements for impact resistance. Roll-molded rims assure fullest structural strength, extra comfort. 2-way indirect ventilation minimizes fogging.

Flexible BAL-guard

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SAFETY MAINTENANCE & PRODUCTION

VOL. 107, No. 2 • FEBRUARY, 1954

— 4 — POINT SHOE PROGRAM

By HARRY H. KAUFMAN
Safety Director
The Flintkote Company
East Rutherford, N. J.

MANY of us dealing in safety probably do not stop to study the development of some of the equipment and protective devices that we use and instruct others to wear. Safety shoes, for example, appear to date back as far as the year 1904 when a type of foundry shoe with fire resistant leather, elastic sides and possibly some fiber reinforcement was used to avoid burns when pouring molten metal.

There does not appear to be a record of just what company first adopted safety shoes for its men, but it is known that the first molder's shoe was sold in Cleveland through retail shoe stores. Research shows that consistent industrial use of the strengthening fiber toe started in 1910. The steel-capped toe was introduced in 1925 and there continued to be considerable controversy between the advocates of the steel toe cap and the fiber toe.

To get strength with fiber in the toe box, it became necessary to resort to bulk. Such a shoe was unsightly, uncomfortable, and objected to by workmen. They were being made on ordinary lasts which were not intended for heavy box toes. The fiber itself would soon lose its protective features because of softening from heat, moisture, oil and perspiration. Some fiber box toes were

(Continued on page 20)

This company's approach to getting more employee's feet into safer shoes followed certain educational principles:

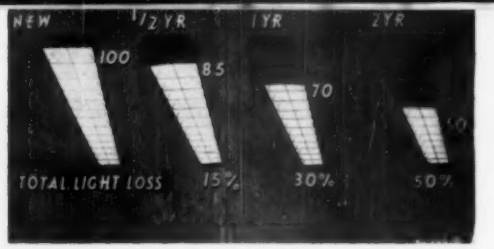
1. PREPARATION-Samples, literature, and talk aroused employees' interest in safety shoes.

2. PRESENTATION-A film, which showed the modern safety shoe, and what it did, sold workers on protection.

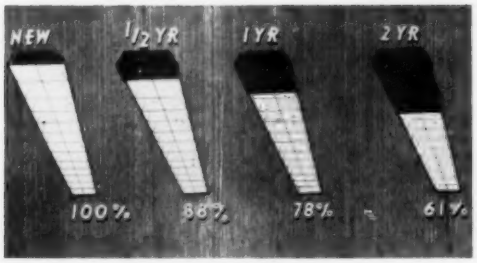
3. APPLICATION-The actual measuring of feet, delivering of shoes to the plant, and fitting was the job of the safety shoe companies.

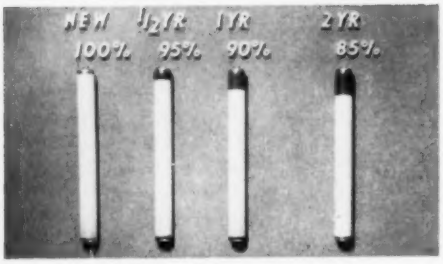
4. REVIEW-Twice a year company reviews its program and reminds employees of latest developments.

The Problem:



Economic Lighting Maintenance





Pictures by courtesy of General Electric Co.

The pictures at left and above show the two main causes of lighting loss, dust and lamp depreciation. The picture at upper right shows the total loss accounted for by adding lamp depreciation (left) and dust collection (right). The problem of efficiently cleaning and changing lamps to maintain the lighting system against these lighting losses is difficult and has been time consuming. Since the cost for labor is taking a larger share of the lighting maintenance budget, the cost of lamps themselves has become less important and the economics on which maintenance plans are based are changing. It is now usually cheaper to throw away lamps before they are fully consumed because the labor savings are greater than the cost represented by the discarded lamp life. A tested way to save a substantial part of maintenance time (and money) is to use a mass production system of lamp changing. If the present labor costs for making spot replacements exceeds 45 cents, a firm can probably save money on group replacement. If cleaning is done at the same time the break-even point becomes as low as 30 cents.

More and more concerns are adopting a group replacement program. Several variations of group replacement programs in actual operation are described in this article . . . plus some other interesting maintenance ideas which should prove useful in helping make lighting maintenance cheaper and faster. . . . . No matter how you do it . . . careful planning of your maintenance schedule will give you more for money spent on lamps, labor, fixtures and electricity . . . light at lower cost.

The Answer: Group

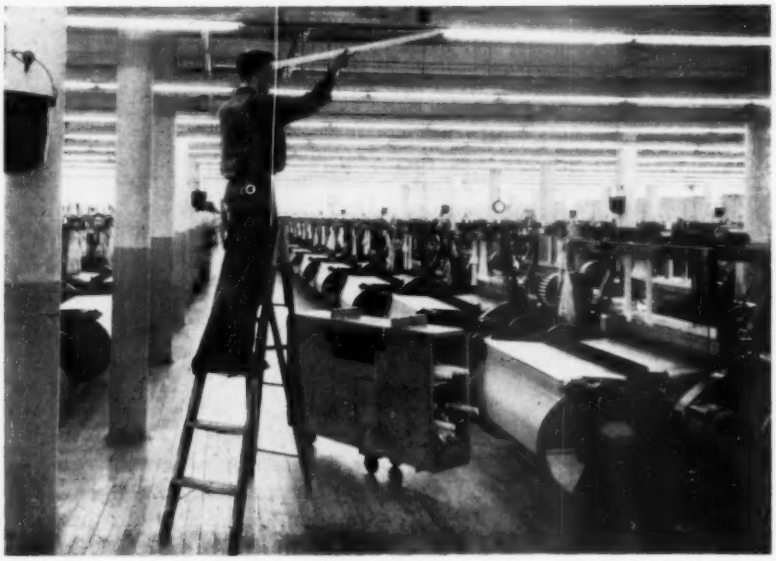
Case History #1.

In a carefully controlled test of the group replacement plan at the Hathaway Manufacturing Company, New Bedford, Mass., the plan was found to be the quickest, cheapest and most accurate method of handling lamp and starter maintenance.

During one month 1684 single-lamp 40-watt sections were cleaned and relamped with new fluorescent lamps. A quantity of 168 lamps (10 percent) was laid aside for spot replacement of normal burnouts, these lamps to indicate 65 percent of average life attainment, serve as a check on average lamp life realization and indicate logical time for next group replacement.

The lights operated 96 hours a week for a total of 5000 hours during the test. Spot replacement of lamps was made 3 times a week on a tour basis at a labor cost of 10.4 cents. Group replacement and cleaning required 100 man-hours at less than 10.5 cents per lamp. After 12 months, fixtures in a test area were cleaned. Footcandle readings showed a gain in light due to cleaning only of 1.3 footcandles or approximately 6.5 percent. Test results show an annual cleaning and group replacement program after 5000 burning hours has saved 2300 dollars and provided 25 percent more illumination.

Actually, not all of these benefits are due solely to the group replacement program. However, test does show: retesting "burned-out" lamps catches many good lamps that would be thrown away, group replacement reduces labor cost so cleaning is virtually free of charge. Labor cost for spot replacement almost exactly equals cleaning and lamp replacement cost on a group basis, increased efficiency due to cleaning plus increased efficiency from group replacement produces 25 percent more illumination.



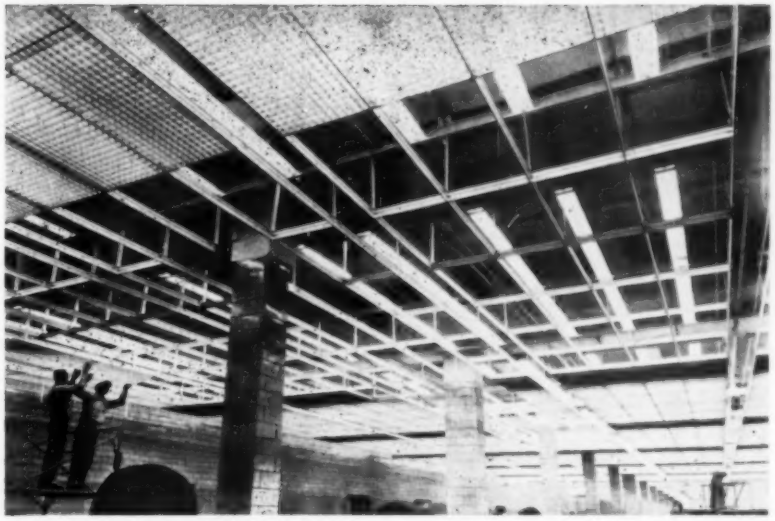
FEATURE

Second article of a feature series on Lighting Maintenance. Next article will appear in the March issue of SM & P.

Lighting Replacement!

Case History #2.

Good lighting, acoustical strips, and use of light colors combine to create pleasant, efficient seeing conditions in the Mennen Company's plant near Morristown, N. J. The 16,000 square feet of louvered ceiling in this plant is one of the largest areas to date and the first in a production area. It provides more benefits such as: appearance is a definite morale factor, helps get and hold the high-calibered employees needed; the lighting is above average (about 60 footcandles), and comfortable with minimum glare and shadows; this reduces employees' eyestrain and fatigue, leading to increased production and improved quality control.



Experience in the first 18 months will determine whether the relamping schedule will be based on lighting levels or on hours of burning. Estimated time between replacements is 12 to 18 months on a two-shift basis. The louvers will be washed in a portable wash tank. They will be dipped clean, rinsed, and then air dried. The louvers are hinged for easy access to the utilities, piping sprinkler heads, and lamp channels normally concealed from view. The louvers may be completely removed to clean.

Case History #3.

Fluorescent lamps are replaced at 70 percent of rated life at North American Aviation, Inc., Los Angeles. At the same time, fixtures are cleaned.

There are 16 rows of two lamp, 90-watt fluorescent fixtures. There is a carriage on each cable alongside each row of lights. They are 2 feet wide and 5 feet long and will hold two 200-pound men plus 150 pounds of equipment. The maintenance man can get in the car from either end and pull himself to the job. The time saved in one relamping and cleaning more than paid for the entire cable installation. Group replacement and cage savings have cut maintenance costs 75 percent.

TO SUM UP: Labor costs have made it cheaper to replace lamps in groups before burnout. Changing lamps in groups before burnout brings other benefits besides labor savings: (1) Fewer interruptions to personnel because group relamping is generally done in an off-period, and fewer burnouts between replacement times. (2) Auxiliary equipment lasts longer, breaks down less often. (3) The lighting system looks better, (fewer burned out lamps, more uniform color). (4) Improved worker morale and housekeeping habits. (5) Lighting levels stay higher because lamps are used when their output is most efficient. (6) Better lighting helps cut accident rates. You can figure the right time to group replace lamps in either of two ways: (a) Set replacement time at a percentage of rated life, based on hours lamps burn a year or percent of burnouts. (b) Set a minimum lighting level and group replace and clean lighting when it drops below this level.

"HERE, Joe, wear this." How many times this is a worker's only introduction to a respirator! Many people seem to think that, because dust respirators are relatively simple, workmen should be able and willing to wear them properly with no more formal instruction than this.

Such an approach has caused grudging and haphazard acceptance of many a respirator program. The men should be told why a respirator is worn, should have it properly fitted to their faces, should be shown how to test for tightness of fit, should have its mode of functioning explained, should be encouraged to change filters and clean them as often as necessary, and should be asked to keep the respirator clean and in proper repair.

No salvage captain would allow, much less order, an untrained man to put on a diving suit and descend into muddy, treacherous water. Yet time and again men are allowed to enter or ordered to enter highly toxic atmospheres without ever having put on an industrial gas mask. The responsibility of management does not end when a gas mask is placed in an attractive case in a strategic location in the plant. Each man who might have to use it in an emergency should be trained in its use. Nothing builds up a man's confidence in a gas mask more than practice in wearing it for several minutes while performing expected emergency tasks in an atmosphere that is highly odorous or unpleasant to breathe. Persons who are to wear self-contained breathing apparatus should be given a thorough course in its construction, use, and maintenance.

Use the Mask Correctly

In a certain plant, a worker noticed that his partner, who had entered a tank, had collapsed and was lying near the foot of the ladder leading down into the tank. He immediately called to other men working nearby, put on one of two gas masks at hand, and descended into the tank. He examined the prostrate man, climbed the ladder until his head was at the level of the manhole, and removed the facepiece of his gas mask to say something to the men outside. He immediately fell to the bottom of the tank and remained there motionless. Another man put on the second and last gas mask, descended the ladder, inspected the 2 bodies, climbed the ladder to the same point that the previous man had, and also removed his facepiece. He too fell to the bottom of the tank.

Thus 3 men and all the gas masks were lying at the bottom of the tank. Their bodies were not recovered until others arrived with additional gas masks, which they used only after making certain that the atmosphere in the tank was not deficient in oxygen. This incident should emphasize the need for returning to uncontaminated air before removing the gas mask facepiece, as well as the fact that a person can see an accident happen to someone else, then immediately repeat the same unsafe act himself.

There have been many instances in which several men, one after another, wearing gas masks have entered an atmosphere, later found to be deficient in oxygen, in an effort to rescue a fellow worker. Each man was overcome in turn, complicating or preventing rescue operations with needless loss of life. Such incidents attest to the bravery and courage of the men but at the same time show the necessity of testing suspected atmospheres for oxygen deficiency before entering them. A gas mask canister does not add any oxygen to the air breathed through it.

Use the Right Mask

When a man sees someone in distress in an irrespirable atmosphere, he might instinctively put on the first available gas mask and enter the atmosphere in an attempt to rescue the stricken person, without thinking about the suitability of the

USE-DON'T ABUSE-

YOUR RESPIRATORS!

mask for use in that situation. Here again, proper training pays off, because a properly trained man would check to see what type of mask was available and would be familiar with its limitations and advantages. A good preventive measure would be to have ready only respirators safe for use in all anticipated emergencies.

Low inhalation resistance is a desirable characteristic in a dust or fume respirator, but the ability of the respirator to keep dust and fumes from the wearer's breathing zone is of prime importance. Workers have used some weird methods of assuring themselves that their respirators would be easy to breathe through. Some have removed one or both filters or poked holes in the respirators with nails. Others have removed the exhalation valve or propped it open. In one recent case, a workman was wearing his respirator upside down so that there were large enough spaces between his face and the facepiece to insert 2 fingers. All these methods were effective in decreasing the inhalation resistance; but, of course, they destroyed the prime function of the respirator —to prevent the wearer from inhaling harmful amounts of dust or fumes.

There is a widespread false notion that a universal gas mask canister adequately protects against carbon monoxide, no matter what the timer reads, provided that it is not too difficult to breathe through. Some fire departments have gone so far as to remove the timer as a useless gadget. Universal gas mask canisters contain a catalyst that converts carbon monoxide to carbon dioxide. The catalyst does not function well in the presence of moisture, therefore, it must be protected from water vapor in the air passage by suitable drying agents. It is the timer's function to indicate the approximate time the canister has had air drawn through it. After 2 hours use, the capacity of the drying agents for removing moisture is seriously reduced, and the canister should be discarded, even if it has been worn only in fresh air.

Recently the Bureau of Mines tested 9 universal gas mask canisters that had been used or unsealed for some time and found that they gave absolutely no protection against carbon monoxide. Yet, the inhalation resistance of 6 of these canisters was essentially the same as for new, unsealed canisters. This test should convince even the most confirmed skeptic that low resistance is no criterion for judging the condition of universal gas mask canisters.

One of these canisters had been attached, with the bottom seal removed, to a timer and facepiece in a gas mask case on a fire truck for 9 months. When tested against car-

FEATURE

Third article of a series on Respiratory Protection. First two articles appeared in December and January issues.

PART II

By S. J. PEARCE
Chemist in Charge,
Respirator Section
Health Branch,
U. S. Bureau of Mines
Pittsburgh, Pennsylvania

bon monoxide it was found to be entirely ineffective. Yet it had never been used! The Bureau of Mines has recommended for years that the bottom seal of a universal gas mask canister should be removed only while the canister is in actual use and replaced immediately afterwards. The data obtained by these and other tests indicate that the protection given by a universal gas mask canister against carbon monoxide is seriously in doubt after the weight of the canister has increased about 45 grams (1.6 ozs.). Canisters should be weighed when received from the manufacturer and discarded whenever they show a gain of 45 grams in weight. This applies to canisters stored on shelves unused, as well as those being used on gas masks.

The problem of determining when a canister is no longer effective against a gas applies only to gases that have little or no warning properties. Most gases give warning of impending failure of the canister by their odor, taste, or irritating effects on the eyes, nose, or throat. If a person who has been wearing a mask in an ammonia-air atmosphere detects the odor of the gas, he knows the canister is exhausted and should return to fresh air to replace it immediately.

Tricky Gases

However, no such warning is given by gases such as methyl chloride and methyl bromide. There have been several instances of men wearing gas masks, while fumigating with methyl bromide, breathing enough gas through the canister to affect them seriously or fatally without being aware that the gas was coming through the canister.

One experience illustrates how sneaky hydrocyanic gas can be. This man was testing a gas-mask canister against a high concentration of hydrocyanic acid gas. The gas-air mixture was in a chamber to which the canister was attached and the tester was drawing the mixture into the canister by breathing through a facepiece attached to the canister. In this way he remained in fresh air and needed only to remove the facepiece if the canister failed to stop the gas.

After the test had been in progress for some time, his assistant left the room for a few minutes. Upon his return he found the tester lying on the floor unconscious, still wearing the facepiece and still breathing through it. The canister had become exhausted and was allowing hydrocyanic gas in increasing amounts to enter the facepiece.

After the man had been revived he admitted that, though he had been on the alert for some warning to indicate that the gas was leaking through the canister, he had received none. If this could happen to a trained test operator whose whole attention was devoted to detecting the gas, what could happen to a fumigator concentrating on his task?

Both methyl bromide and hydrocyanic acid are widely used as gaseous fumigants, and incidents similar to this one have caused many fumigators to insist that fresh canisters be used when the gas is being applied, that they be discarded and fresh canisters again attached to the masks before the fumigated area is reentered to air it out. This enlightened attitude makes no attempt to squeeze the last bit of life out of the canisters with possibility of injury or even death for the wearer.

It is a wholesome contrast to the attitude of a man who phoned me recently. He owned a greenhouse and had been applying parathion aerosol for controlling insects. He wanted to know if I had any old gas mask parts that I could put together and let him have. He didn't want to go to the expense of buying a new gas mask because he had never had any accidents while using the poisonous material; he just wanted something to have around. I told him that I had no such material; and, that if I did, I wouldn't let him have it. Just because he had been lucky for a while was no guarantee that he would always be. I referred him to the recommendations of the Department of Agriculture on respiratory protection while using parathion aerosols and suggested that he buy the proper mask. I ended the conversation by reminding him that betting a man's life against the price of proper protection was giving too great odds.

Parallel with Ships

An interesting parallel exists between watercraft and respirators. Both have a tremendous range in size or ability, from the rowboat to the ocean liner and from a handkerchief held loosely over the face to a 2-hour oxygen breathing apparatus. A liner can weather the worst storm and the 2-hour respirator gives adequate protection against most hazardous atmospheres. Yet one would not go fishing in an ocean liner any more than he would wear a self-contained breathing apparatus to sweep the basement floor. Neither would one venture on the open ocean in a canoe or use a handkerchief in truly dangerous atmospheres. Each type of respiratory protection has its correct use as do ships. Just as a person might get away for a while with overloading a rowboat till the water was within 2 inches of the gunwale, and be sunk by the first big wave; one might safely use an air-line respirator while making repairs in highly toxic atmospheres, but if the air supply failed, the results would be tragic.

Another instance where people are courting death is using an air-line respirator supplied with air from a portable compressor to enter and work in sewers and conduits filled with irrespirable atmospheres. The air-line respirator is designed for use in atmospheres that are not immediately harmful or from which the wearer can escape without the aid of a respirator. It is incorrect and unsafe to use it as a substitute for the hose mask with blower or the self-contained breathing device.

A workman was welding in an open ditch, where the nature of the job required that he wear an air-line respirator. No source of respirable compressed air was readily available, so an oxygen tank with pressure-reducing and regulating valve was attached to the inlet end of the

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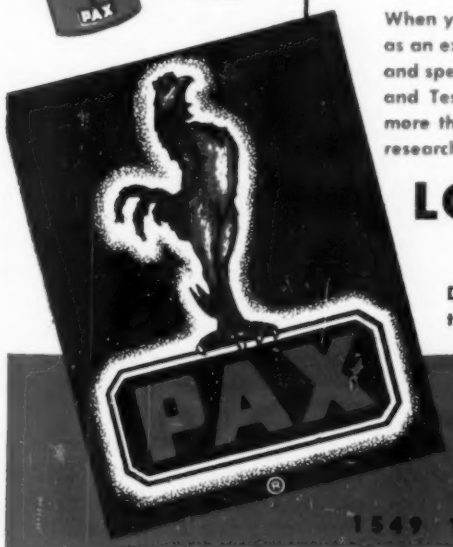

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air-supply hose. All went well until a spark from the welding operation came in contact with the facepiece which, of course, was surrounded with oxygen-enriched air from the exhalation valve. The facepiece virtually exploded in the workman's face, killing him immediately.

Two incorrect practices were involved in this accident. In the first place, pure oxygen should never be put through any system unless the system is especially designed for use with oxygen. In the second place, it is unsafe to use open-circuit-type respirators employing oxygen, such as those in which oxygen is exhaled to the surrounding atmosphere, rather than being recirculated, in any situation where there are sparks or open flames. Combustible material burns almost explosively in oxygen or oxygen-enriched atmospheres, such as are present at the exhalation valve of this type of respirator.

Deliver Pure Air to Mask

In using any supplied-air respirator make certain that the air delivered to the wearer is free of harmful gases. Some serious accidents have occurred because the air intake of the compressors was too near the exhaust of the gasoline engines driving them or in another contaminated atmosphere. The air supply may also be contaminated by carbon monoxide, formed when an internally lubricated air compressor overheats. One preventive measure is to install a temperature alarm that shuts down the compressor in case of overheating. Another method is to install a carbon monoxide alarm on the effluent side of the compressor.

There is a little trick that workmen frequently play on themselves. When they are required by management to wear a dust respirator at all times while working in certain areas of the plant, they wear a respirator only when the supervisor is around, then slip it off and wear it around their necks. According to the way they look at it, they are putting one over on the boss. In reality they are putting something over on themselves. Management would not go to the expense of providing respirators if they were not necessary to protect the workmen. The dust is just as harmful whether the boss is there or not!

Intelligent instruction, clear understanding and proper use make the difference between respirators that perform their protective function and those that merely give a false sense of security.

Picture by courtesy of Consolidated Edison Company of New York, Inc.

This is the concluding part of this article. The first part appeared in the January issue.

From an address delivered at the 40th annual National Safety Congress.

Shoe Program

(Continued from page 13)

even made of an explosive material reminiscent of the recent epidemic of explosive sweaters; and, as now, there were some serious burn cases from the use of these flammable materials. Although the metal-toed shoe was accepted by a large percent of safety men, some still favored the composition toe because they felt that the steel box would imprison the foot in case of a severe blow. Time, however, disproved this theory and by 1936 about 95 percent of all safety shoes carried a steel box toe.

A second major improvement by 1936 was the development of a special type of last with a placement of the wood in a different position from that used in the making of ordinary shoes. The newer last, combined with the steel box toe resulted in better protection, improved comfort and better appearance, provided the shoes were properly fitted. Lighter type lasts and patterns were developed, improvements were made in the shape of the steel toe box and gradually the shoes began to lose the tell-tale signs that they were safety shoes. It has been estimated that by 1936 1½ million pairs of safety shoes were sold and that by 1939 this figure had jumped to 2½ million. We are still searching today for an accurate estimate of how many million pairs of safety shoes are sold annually. More recently further developments in lasts, steel toes, leathers, soles, innersoles, threads and styles have made the modern safety shoe competitive with dress shoes. The competition stems from appearance, durability, comfort and cost.

Industrial Promotion of Safety Shoes

We have attempted to complete a number of surveys in an effort to find how some industries promote the sale of safety shoes, and how their efforts have been rewarded. The thing most revealing about the results of all our inquiries is that there is plenty of room for additional use of safety shoes and there is much room for greater promotion of the use of safety shoes by the industries themselves.

The petroleum industry, on the average, has less than 50 percent coverage as shown by the results of this survey. Incidentally, safety shoes are not made requisite by a single one of the reporting companies. This is not unusual. The majority of those surveyed have a plant shoe store but not a payroll deduction plan. This particular industry has its peculiar problems because the area covered is very wide and in many instances it is extremely difficult to make the shoes available to the men at all times. Just recently, of course, the shoe industry has made available mobile shoe stores to meet the men on the job and to render a service to industries which are spread as widely as petroleum.

It may also be noted that there is no uniformity in assuming part of the cost of safety shoes in order to promote their use, nor is there any uniformity in reasons for acceptance of a particular brand or company's safety shoes throughout industry. There is, however, a group of outstanding reasons why, in most cases, the shoes were selected and we believe these reasons to be: quality, service, cost, and availability. The reasons for complaint, in order of importance were: poor fit, too heavy, high cost.

There is no great uniformity of procedure within a group of 12 reporting airplane organizations either. Here better than half of the industry

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has in-the-plant shoe stores and in 17 percent of the plants the mobile trailer shoe store makes the shoes available. At least half of the plants sell the shoes at cost, which usually represents a wholesale cost.

Another brief survey, of the roofing industry, of which we are a member, indicates that the roofing industry does not make the wearing of safety shoes compulsory on a plant-wide basis, but they do have payroll deduction plans. Fewer than 50 percent of their employees are wearing safety shoes but the majority of the reporting industries do help to pay for the safety shoes.

What the Shoe Industry Offers

We sent some 45 questionnaires to the shoe industry, its suppliers, and associated jobbers and asked 5 specific questions. What outstanding features, including construction, cost, style, etc. made their shoes outstanding; we asked, what things would they recommend seeking in the best safety shoes; what service features had they to offer along the lines of—movies, posters, booklets, in the plant fitting, exchange policy, refund or other services; what about their construction features, including—soles, uppers, threads, insoles, arches, etc.; and finally, we inquired as to what they thought the industry would have to offer in the future in the way of improved safety shoes.

In answer to the first question, about outstanding features, most manufacturers agreed that the quality of materials, workmanship, styling and ultimate construction made up the outstanding features of their shoes. All agreed that they were making special shoes for special jobs in special plants and at least one manufacturer reported as many as 50 different numbers specifically designed for various exposures.

The manufacturers' answers to the second question, as to what they would look for in attempting to obtain the best safety shoe, were quite simple. They suggested that the shoe fit the job, fit the floor, and fit the man. Fit in complete comfort, and high quality were constantly reiterated in answer to this question.

Answers to the third question concerning service features included such things as movies, posters, information booklets, in-the-plant fitting, on the job fitting, liberal exchange and refund benefits, clerical systems, and even instruction on how to fit shoes. In the unusual aspect of services, at least one manufacturer offers the services of a guest lecturer. Another offers a small insurance policy amounting to 25 dollars with each pair of safety shoes. The money is paid to anyone who receives injured toes while wearing their safety shoes.

The fourth question, the manufacturers' recommendations on shoe construction, yielded a variety of answers. Most of them hail the new advance in smarter styles. Several of them have started using the synthetics, such as dacron, nylon, tolex and others. Insulation of the steel cap on both sides to protect the wearer from being chilled or from wearing holes in his socks is a more recent improvement. Wooden fiber and steel shanks are varied according to the type and weight of the shoe needed. There are a host of types of leather uppers ranging from retan, kip, cowhide and horsehide to pigskin. Insoles are made of fiber, leather, plastic, rubber cushion with and without arch support materials. One of the latest developments includes the mildew-proofing of the insoles and the rust-proofing of the steel caps.

The final question which was asked of the industry was what it could expect to produce in the future, and their answers mostly concurred in that they would look to the suppliers of the various findings for radical improvements. At least 2 or 3 suppliers, however, had very specific ideas as to what would occur in the future. They anticipated a greater use of synthetic material in shoes. One manufacturer is introducing a new custom made line of safety shoes which are not meant to replace the present shoes but to supplement the line for men accustomed to wearing dress shoes.

It is difficult to see how the sale of safety shoes will not grow by leaps and bounds. Various types of shoes, including foundry shoes, spark-proof shoes, shock-resistant shoes, wood sole shoes, non-conductive shoes, shoes with special soles, such as rubber and cork, rubber and cord, and a host of other synthetics are being offered for a varied and critical consumer. There seems to be no reason for complaint by the consumer that there is not a proper type of safety shoe to fit the need.

Shoe Program Approach

One modification of many plans used successfully in the increased sale of safety shoes brought an increase in our plant. Safety shoe sales are more than 700 percent over former years. We used certain principles of education: preparation, presentation, application, and review.

In preparing the workers in the plant for the approaching sale of safety shoes we first secured samples from several safety shoe representatives along with prices, outstanding features and service offers. These were first presented to a plant-wide safety committee, which, as the name implies represents the plant as a whole. The decision as to which shoe to promote in the plant came from this group. They in turn went back to their respective departments, showed samples and literature from the two companies selected and generally talked about the fine features being offered through the use of these shoes. The preparation was so good that we were soon being asked by employees when they could learn more about the shoes.

The actual presentation of the idea came about through the showing of a film. It did an effective job of convincing those who viewed it that the present safety shoes are better than the old type safety shoes and that they cannot be distinguished from regular dress shoes. We took advantage of the fact that these presentable and dressy shoes could be bought at low cost, and combined it with the dollar company rebate, to promote safety shoes for both work and dress wear.

We thus encouraged routine

← (For further information about product on opposite page use Key # O-13 on free Inquiry Card on page 75)

wearing of safety shoes for both work and dress whenever this was possible. Even old shoes worn in the plant would then be safety shoes. Acting on the advice of the many shoe representatives interviewed, we recommended and were able to gain management approval for a payroll deduction plan. This was the clincher. Thus with the film doing most of the selling, we were in position with the preparation, and now the presentation of the film, to offer cards on which workers wrote their names and specified style, size and color of shoes desired.

The third step or the application was taken care of by the representatives of 2 safety shoe companies who came to measure the feet of the persons enrolled on the cards. Then the safety shoes were delivered to the plant and these same representatives tried the shoes on for satisfactory fit. The employee also signed a withholding slip which enabled the accounting department to make the necessary payroll deductions. The safety shoe adjustments necessary were very few in number—less than 5 percent.

This policy of promotion of safety shoes to be worn for dress purposes has paid off in repeat sales. We now begin to see both new and old safety shoes being worn by the same persons, indicating a trend has started all over the plant. Thus, there is now a foundation on which to review the safety shoe program regularly, twice a year, to keep reminding employees of the latest developments which are available for improved durability, style and comfort. We are aiming for a goal of 100 percent coverage at all times.

From an address delivered at The 23rd Annual Greater New York Safety Convention.

POSITION WANTED

Safety Engineer with nine years chemical plant experience and ten years in industrial and construction safety desires position in Northeastern U. S. No traveling preferred. Address replies to Box 254, c/o Safety Maintenance, 75 Fulton St., New York 38, N. Y.

Engineering for Production Control

PHYSICAL control as applied to production control means the analysis of men, material and machines and their effective relation to productivity through the proper use of engineered planning. This means the use of good plant layout, line balancing, material handling, and equipment. This is the theme of a paper read to the American Society of Mechanical Engineers, by J. M. Druliner, industrial engineer, Norris-Thermador Corporation.

There are no two organizations which can use the same system or the same packaged theory to produce the end result, which is higher productivity through use of less man hours, less material, fewer machines, and producing higher quality products on schedule, according to Mr. Druliner.

If due consideration is given by production control to the physical location, movement and processing of the product in the pre-planning stages of its development, many of the costly and complex tools and ideas introduced into production control systems can be eliminated. All levels of management, from the president to the foremen, must cooperate to accomplish physical production control. They must recognize that the industrial engineering functions of plant layout, materials handling and time standards are not necessary evils but are as necessary as product design, metallurgy and tool engineering.

Production control starts with plant layout. A plant can produce only as much as it can handle physically. Production, whether it be a job shop or a straight line type of operation, can be compared to a pipe line. It may be a single product started with a single piece of raw material and ending with a finished saleable item such as a cartridge case. The rate of the first operation and subsequent operations is likened to the diameter of the pipe. It must have the same orifice size on both ends. To put a funnel on the opening of the pipe will not increase the flow on the opposite end. In the case of a product with many subassemblies, such as an automobile or an airplane, many feeder lines of all diameters are needed or, in the terminology of a plant layout engineer, a fabricating department, a sub-assembly department and a final assembly department—some operations with banks of parts, some with previously scheduled operations and some with completed or outside purchased parts, all geared and engineered to the volume necessary in each pipe line to produce the end result.

Most plant layouts take the basic machinery and equipment necessary to fabricate or process the product and locate them very scientifically in the plant areas by templates or engineered drawings. The material handling equipment, storage racks, work in process, air lines, and so forth, are assumed to fit in any area or opening left after the basic equipment has been installed.

Many service departments forget that production earns their bread and butter, therefore, they must serve production directly and not indirectly. They must lay out their operations physically in the same manner as production so as not to restrict the pipe line flow. This applies not only to inspection departments but to warehouse and other indirect operations.

Production objectives to be obtained through physical control as applied to production control, Mr. Druliner says are:

1. Many costly paper work controls and overhead expenses will be eliminated.
2. Higher productivity for each direct labor hour expended plus higher worker morale.
3. Increased productivity from capital expenditures for machinery and floor space.
4. Reduced insurance rates and lost time hours.
5. Better schedule attainment and improved quality control.
6. Increased flexibility for product and engineering changes.

WHAT KIND OF A GLOVE PROGRAM?

By H. H. COLEHOWER, Pres.
C. Walker Jones Co.
Philadelphia, Pa.

THE kind of glove program a company adopts depends primarily on the safety the program provides and its cost. Edgcomb Steel Company's steel warehouse in Philadelphia, Pa., supplies protective work gloves free of charge to its employees. It cuts the cost of supplying these gloves in 3 ways: by buying high-quality work gloves for longer life, by sending its used and soiled gloves out for reconditioning, and, to prevent pilferage, by requiring employees to turn in soiled gloves before issuing them a new pair.

The company once sold gloves to employees at cost. Later, it furnished gloves at nominal cost. Later still, it gave the men two free pairs of gloves per week. Finally, several years ago, it adopted the policy of supplying free as many as were needed. Furnishing free gloves has been found to pay off in terms of better employee relations and eliminating a lot of inconvenience.

When the men bought their own gloves, they favored low-priced canvas gloves. Initial cost was their primary concern. Now that the company furnishes them free, the men ask for gloves which will give them the most protection with the greatest wearing comfort.

Canvas gloves are still used to some extent—usually where sensitivity of touch is the most important consideration—but most of the gloves worn are either leather palm gloves or gloves made from a knitted, loop pile fabric. Some plastic-coated gloves are used where excessive wear is encountered.

The loop pile fabric gloves were originally purchased to provide protection against cuts on hands and fingers when handling metal behind the shears. The twisted loop pile fabric, it was found, acted as a cushion against the sharp-edged metal.

A Growing Practice

The practice of furnishing work gloves without cost to employees is one which is rapidly growing throughout industry. Comparing two surveys—one made in 1944 and the other in 1953—we find that less than 60 percent of the companies replying to the earlier survey furnished gloves free to employees; whereas, in the 1953 survey, the percentage had climbed to over 75 percent.

Those firms which furnish gloves —and other protective clothing— without cost to employees also save money because of lower accident rates. The 1953 survey, referred to above, showed that those firms which furnish gloves free have less than half the accident rate of those which did not. This applied both to total accidents and to hand, finger, and wrist injuries. Of course, the fact that gloves are furnished free cannot account by itself for better safety records, since plants which supply gloves to employees without cost are likely to have better overall safety programs. *(Cont'd p. 26)*

Gloves are an important form of protection for employees, but what is the most economical way of providing this safety? Here are some of the methods used. . .

1. Sell employees their own gloves at cost.

2. Sell employees gloves at a nominal cost.

3. Give employees a specified number of gloves free over a cetain length of time.

4. Provide employees with as many pairs of gloves as are needed, free.

One company tried all these plans, and this article discusses the pros and cons. . .

However, free gloves do contribute to lessened hand, finger, and wrist injuries because (1) the plant safety engineer can make sure that the best type of glove for the job is used, and (2) employees are more likely to turn in gloves for new ones before they become so tattered and worn that they are unsafe.

Even minor cuts and bruises, resulting from failure to wear gloves or from using badly worn gloves, can be costly. One study, made in 1951, revealed that the average first aid case involving hand or arm injury cost $2.44—without taking into account the reduced efficiency resulting from the injury. When infection occurred, the cost was estimated at $39.94.

Long Life Gloves

Among those companies which furnish work gloves free, there is a trend to buy better quality gloves, not only for safety reasons but also because lower total glove costs result from increased glove wear. The thick, twisted loop pile fabric gloves, for example, offer a combination of properties which are found advantageous in a wide range of glove applications. Outstanding among the properties of the cloth from which the glove is made is its ability to resist wear. This is further enhanced by the reversible construction of the gloves, which permits the glove to be worn on either hand. The gloves cost about twice as much as canvas gloves, but their longer life makes the cost lower in the long run.

Their ability to withstand repeated cleaning contributes to longer glove life and lowers glove cost. Usually they can be reconditioned 3 or 4 times. Often they can be cleaned as many as 6 times. Heat resistant grades of these gloves are made from extra-heavy cloth and are suitable for any high temperature application except those requiring tongs for safe handling. The cloth does not dry out and stiffen when heated but retains full flexibility. The heat resistant gloves can also be flameproofed for additional protection.

The twisted loop pile construction of the fabric has 3 important advantages: (1) the thousands of air cells in the fabric insulate against heat and cold, (2) the material cushions the cutting action of sharp-edged materials, and (3) it affords a better grip when handling slippery objects.

Pictures by courtesy of C. Walker Jones Co.

Manufacturing Injuries Low For Half of '53

INJURY-FREQUENCY rates for manufacturing remained at record low levels during the first 6 months of 1953, according to reports compiled by the U. S. Department of Labor's Bureau of Labor Statistics. The average of 14.1 work injuries per million manhours worked during the second quarter of 1953 was 2 percent higher than for the first quarter but was 4 percent below the rate of 14.7 recorded for the second quarter of 1952.

The average of 14.0 for the first 6 months of 1953 was 4 percent below the corresponding rate for 1952 and equaled the previous low recorded in 1950. Monthly rates moved steadily upward from the low of 12.6 in December 1952 to 14.3 in March of 1953, equaling the March 1952 figure. The rates for April and May showed a slight decline. Although there was a slight increase in June to 14.4, this increase was not as great as took place in 1952, and the June 1953 rate was 7 percent below 1952.

Comparison of averages of the first 6 months of 1953 with the same period in 1952 indicated significant decreases in 42 industries, increases in 35 and virtually no change in 55 of 132 classifications. Decreases were concentrated in the lumbering, chemicals, primary metals, and machinery groups. Seven of the 8 industries in the lumber group showed significant decreases between the first 6 months of 1952 and 1953. In logging the 6-months' average dropped from 90.5 in 1952 to 78.7 in 1953. The rate for integrated saw and planing mills decreased from 46.6 to 40.0, and that for miscellaneous wood products, from 34.7 to 29.1. Other industries recording outstanding decreases in their 6-months average were compressed and liquefied gases, from 13.8 to 8.2; steel foundries, 26.4 to 21.0; and welded and heavy-riveted pipe, 16.2 to 10.6.

Contrary to the general tendency, a number of industries recorded substantial increases over 1952. In the cutlery and edge tools industry the rate for the first 6 months increased from 14.0 in 1952 to 19.8 in 1953; hand tools, files, and saws, from 16.7 to 22.1; and fabricated wire products, from 16.9 to 22.3. The rate for the miscellaneous nonmetallic mineral products industry increased from 16.1 to 22.0, and that for vegetable and animal oils and fats, from 20.3 to 25.6.

Outstandingly high rates for the first 6 months of 1953 were recorded in logging—78.7, sawmills—53.9, integrated saw and planing mills—40.0, boatbuilding and repairing—39.4, structural clay products—36.4. Low rates among the industries for which data were available were: 1.0 for synthetic fibers, 3.1 for synthetic rubber and miscellaneous communication equipment, 3.3 for rubber footwear, 3.4 for aircraft, 3.5 for electric lamps (bulbs), 3.9 for explosives, 4.0 for radio tubes, and 4.6 for electric equipment for vehicles.

Twenty Year Record of Accident-Free Driving

A RECORD of 20 years of accident-free driving has been rolled up by Von Haines, driver for Anaconda Wire & Cable Company's Marion, Indiana mill.

Recently awarded a certificate of merit for his estimated 170,000 miles of safe maneuvering of trucks, Mr. Haines advises other drivers to "always be alert for something wrong to happen."

New VISOR-TUC

WATCHEMOKET eye SAVERS

Metal Retrax MODEL 422
Plastic Retrax MODEL 425

Over-Eyes Protection . . . *plus all the features of "Tuc-Away"*

SAFETY

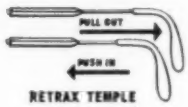
"Visor-Tuc" fits snugly against wearer's forehead to provide over-eyes protection from glare and flying particles.

Semi-cup Eye-Savers Lenses prevent entry of particles from side and bottom.

Eye-Savers Lenses are shatterproof . . . never splinter into the eye.

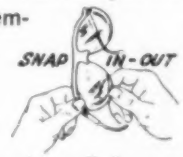
COMFORTABLE — *Easy to Wear*

"Visor-Tuc" weighs hardly more than an ounce . . . rests lightly on the nose . . . Universal nosepiece assures comfort. Retrax Temples in metal or plastic can be adjusted instantly by each worker to suit the shape of his face . . . long or short, wide or narrow. Optically correct Eye-Savers lenses prevent eye strain and permanent injury resulting from distorted image.



ECONOMICAL — *low-cost protection*

"Visor-Tuc" initial cost is lower . . . maintenance less. Inventory is reduced. Single frame style fits all workers . . . thanks to Retrax Temples and Universal nosepiece. Replaceable lenses are easily removed and inserted by the wearer and are interchangeable in both "Visor-Tuc" and "Tuc-Away". Lenses are available with regular side shield, long (1") side shield or semi-cup, in clear or light, medium and dark green.



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(For further details, use Key # O-15 on free Inquiry Card on page 75)

Industrial Hygiene

Associate Editor
Jacob A. Goldberg, A.M., Ph.D.

Industrial Hearing Loss

AMERICAN industry now has for the first time a large body of usable data for relating average hearing loss to noise exposure in industrial environments. The data are contained in a 60-page report to be released after a year and a half of study by a subcommittee under the auspices of the American Standards Association with financial support from U. S. Navy and Air Force. Walter A. Rosenblith, Professor in the Department of Electrical Engineering, Massachusetts Institute of Technology, heads the committee.

"By use of some 20 graphs contained in the study," Professor Rosenblith stated, "management can now estimate the probable hearing loss of a group of individuals exposed to noise of specific characteristics over a given period of time." The committee emphasized that it was industry itself that supplied the data. Among the occupational groups studied were airline pilots, riveters and mechanics on jet plane assembly lines, gun operators in the proof-firing room of an armory; and drop-forge operators.

Among the committee findings were these:

1. Among airline pilots, intermittent exposure to noise resulted in lower average hearing losses than did continuous exposure to similar noises;

2. Recovery from hearing loss after exposure to noise has ended is small, although young people with small permanent hearing losses seem to show more recovery than do older people with larger permanent losses.

The Larger Problem

The committee stresses that the present exploratory study is only part of a much larger effort, by many people and organizations, to define and deal with the human problems created by industrial noise. The study is directed only toward eventual development of standards and criteria for noise control.

Members also stressed that no standards have been written and no criteria proposed. The following questions, they say, must be decided first:

1. What kind and amount of hearing loss constitutes a handicap?

2. How should noises be specified and exposures measured?

3. What percentage of people exposed to industrial noise should a standard be designed to protect?

They added that information is still meager on such an important subject as individual variation around average loss; the effectiveness of ear protection in industry; the effects of noise on the hearing of women; and the effects of exposure to noise upon persons with initial high frequency hearing loss.

Need for Industrial Air Conditioning

ONCE restricted to such specialized applications as textile and printing plants, industrial air conditioning is today a key contributing factor to the efficiency, health and safety of the production employee throughout industry, according to A. B. Waterbury, assistant chief engineer, Walter Kidde Constructors, engineers and builders.

Industrial air conditioning can be used successfully to boost the production unit of output per man hour. However, the manner and extent to which it is applied to a specific industrial plant is largely dependent on

the type of work. For instance, according to Mr. Waterbury, those who work seated at benches or at small machines, as in assembling small parts, inspecting finished parts or in packaging, require a larger amount of cooling in summer or heating in winter than employees who are on their feet or move about.

It is recommended that for employees seated at tables or benches, average air conditioning during the summer should be about 80° F. and 50 percent relative humidity.

Air Conditioning A Safety Measure

One of the most common causes of accidents at production equipment—outside of sheer carelessness and foolish "kidding around," is the drowsiness induced by repetitive hand movements. The "fresh" atmosphere created by air conditioning has sharply reduced accidents and careless operation and has even bettered production.

While high temperature and humidity are an integral part of some industrial processes, it has been found desirable to sacrifice these conditions somewhat, in order to obtain better personal comfort for employees. For instance, in the glass industry, it has been found good practice to install air cooled walls to absorb some of the radiant heat.

Where volatile solvent vapors are handled, air conditioning is a necessity from the safety viewpoint. Where there are high concentrations of such gases, good practice requires two or three air changes per minute. If such vapors may be present in explosive proportions, the relative humidity should be increased to 50 or 60 percent.

In terms of air conditioning equipment, the self-contained or packaged unit is gaining favor for two reasons: it eliminates the need for costly ductwork; and where the process consists of unit operations, it is possible to supply each operation or area with a specific atmosphere from individual air conditioning units.

Procedures for Water Analysis

FORMULATION of a scheme for the analysis of industrial water was announced to chemists attending the semi-annual meeting of the American Chemical Society. The scheme was described in a paper co-authored by Mr. J. H. Phillips, chief chemist and Mr. K. G. Stoffer, senior chemist at the Research Center of The Babcock & Wilcox Company in Alliance, Ohio and presented by Mr. Phillips.

Mr. Phillips pointed out that, from beginning to end, the substances contained in water must be controlled for industrial and community usage. Natural water must be treated with chemicals to remove those undesirable constituents that would interfere with the operation of industrial equipment. It must be treated to remove any constituents that would interfere with the chemical reactions involved in industrial processes. Waste water from many processes must be treated to avoid harmful pollution of streams as governed by city, state, and federal regulations.

As a result, the American Society for Testing Materials, through its committee on industrial water, appointed a task group consisting of a cross-section of chemists in industry and government agencies, with Mr. Phillips as chairman, to set up a scheme for the analysis of industrial water. The findings were presented at the meeting as a part of a symposium sponsored jointly by the A.S.T.M., the Joint Research Committee on Boiler Feedwater Studies and the A.C.S.

The scheme includes a comprehensive list of the properties and constituents in industrial water for which analyses are made and the order of application of the many methods for chemical and physical measurements.

The scheme will have numerous advantages in industry, Mr. Phillips said, in that it will provide a basis for further studies involving water analysis. It will also give governmental agencies and industry a common ground for studying water quality in streams and other water supplies, he said.

Safety Data on Ortho-Dichlorobenzene

A NEW safety data sheet on ortho-dichlorobenzene, a chemical widely used as a solvent and intermediate for other chemical products, has been published by the Manufacturing Chemists' Association. Chemical Safety Data Sheet SD-54 gives essential physical properties and information for safe handling, storage and transportation.

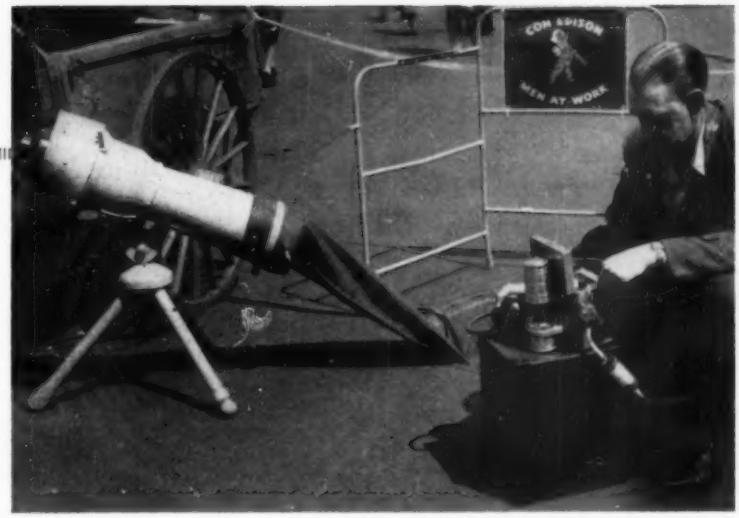
Ortho-dicholorobenzene is a colorless liquid having an aromatic, distinguishable odor. Its vapor, in high concentration, is irritating to the eyes and upper respiratory system, and thus has good warning properties. It is slightly toxic, but in normal use and with application of specific precautions, there is no unusual hazard involved. The generally accepted maximum allowable concentration is 75 ppm by volume in air for an eight hour working day.

Ortho-dichlorobenzene gives off toxic and flammable vapors at elevated temperatures. However, the flash point of the liquid is markedly higher than the temperature at which it is normally handled.

Complete recommendations for safety procedures to be followed in loading and unloading, storing, handling and waste disposal are given in the Safety Data Sheet. A section on health hazards and their control outlines proper personal protective equipment to be used and first aid measures required in the event of accidental contact with skin and eyes.

Copies of SD-54, Ortho-Dicholorobenzene, may be obtained from the Manufacturing Chemists' Association, 246 Woodward Building, Washington 5, D. C. at 25 cents each.

Fresh Air Underground



Blowers such as this one are used to cool and ventilate manholes. The blower conveys fresh air down to the bottom of the manhole through the sleeve attachment. A testing device is used first to make sure no toxic or explosive fumes are present before men enter the atmosphere.

EVERY now and then you hear a joke about a nice, cool manhole. The men who work in manholes don't laugh.

It can get uncomfortably hot in a manhole and no manufacturer ever thought of bottling the aromas there. No one know this better than Consolidated Edison splicers who, at regular intervals, enter the 50,000 manholes that dot the system's 604 square mile service area in New York City and Westchester County.

Manhattan's steam mains, electric feeders and noonday sun beating down on streets all contribute to making manholes generally unpleasant places in which to spend even a few hours. Some manhole jobs, such as cable splicing, may require from 6 to 16 hours of continuous work. There is also the problem of odors. It takes a strong stomach to stand some of the non-toxic but nauseating smells that accumulate underground in unventilated places. Such odors are caused by various uncontrollable external factors—by sewer fumes that sometimes back up into utility manholes, or by decayed refuse particles swept into manholes by rainfall or street flushing.

To make manhole repair or maintenance work as bearable as possible the company's field forces have about 1500 electric and gasoline motor-driven blower units. Two types of blowers are in general use throughout the system. The one most used is a ½ h.p. electric-driven unit with a rated air delivery capacity of 1500 CFM at 5000 rpm. The other also delivering 1500 CFM, is a 2.6 h.p. gasoline motor-driven unit. Both are portable and easily moved from one work location to another. They are used extensively in field work on the distribution system, in electric generating stations, gas plants, and other company locations to ventilate or cool working areas and electric equipment.

Since Consolidated Edison is in the power business, an electric power source is generally available, in one form or another, at most work locations. Electrically-driven units which can be connected to any accessible 120-volt power outlet are used most of the time. However, on occasions when it is inconvenient to use electric equipment, or when a power outlet is not in the immediate vicinity, the gasoline-driven units are used.

Though external factors contribute measurably to the need for manhole ventilating equipment there are times when utility facilities installed in the manholes themselves are a factor. Heavy constant loads on electric feeders, sometimes as many as 15 to a manhole, near the power source at an electric generating station can raise manhole temperature to the 90–100 degree (F) level on a hot summer day, though the 70–80 degree range is more average.

In steam manholes it can be even worse. There the temperature frequently soars above the 100 degree mark. Actually in summertime it may not be much cooler in the street above. But at least there is likely to be some air circulating topside. Down in the manhole, where there is sometimes barely enough room in which to work, 100 degrees will seem much hotter.

Protective clothing, gauntlets, long sleeved work shirts that have to be worn on electric jobs makes the work safer but also makes the man below wish he were somewhere else. Sometimes the nature of the work in the

(Continued on page 69)

AN ANSWER TO AIR P

"DOCTORS CALL SMOG 'DEADLY'; ASK ACTION"
"DOCTOR CHARGES CANCER HAZARD IN AIR"
"SMOG SICKENS 45; ELEVEN SENT OFF JOBS"
"LONDONERS DON SMOG MASKS"

THESE are not just alarmist headlines to raise newspaper circulation or create political embarrassment. The stories that go with them, and others from all over the country, describe the seriousness of the air pollution problem and the aroused attention it is getting.

A recent issue of a national magazine published results of a nation-wide survey on air pollution under the title "Are You Breathing Danger?" One community, stung by a rating of "poor" given it in the survey, has formed a citizens' organization to tighten anti-smog regulations. In Pittsburgh, the mayor, heading a 10-year effort to reduce soot in the city, promised his administration would find "some way to stop other forms of air pollution . . ." In Buffalo proposed legislation to curb air pollution on a county-wide basis is being submitted to the local legislature. A recent public hearing on proposed amendments to New York City's anti-smog regulations focused attention on incinerators and vehicle exhausts. In Harrisburg, Pennsylvania the Bureau of Industrial Hygiene of the state's Health Department has announced a state-wide study to detect dangerous trends in industrial atmosphere before the hazardous stage is reached.

In London, 6000 doctor-members of the local medical committee, recalling that last December's smog brought 12,000 deaths to the British capital, urged citizens to protect their lungs with sixpence of gauze folded into a 6-layer mask over nose and mouth. Within 2 days pharmacists had sold all their gauze.

Some of the greatest excitement about air pollution has attended the recent announcement by Dr. Paul Kotin, professor of pathology at the University of Southern California school of medicine, that cancer was produced on laboratory mice by painting hydrocarbons extracted from Los Angeles smog on their skin. He added there is also evidence to suggest that other mice, living in a room filled with normal concentrations of Los Angeles smog, have contracted lung cancer from the air pollutants. Dr. Kotin also said that he regarded the air pollution by industrial concentrations and heavy vehicular traffic as a significant clue, on the basis of his findings, to the fourfold increase of lung cancer deaths in the past 20 years. Also in Los Angeles, policemen have been ordered to haul into court motorists caught with smoking tail pipes. The Los Angeles County Board of Supervisors, checking its powers of air pollution control, has found that it had the right to demand installation of anti-smog devices on autos just as soon as a feasible device has been perfected.

Who Is To Blame?

The danger of air pollution and the size of public reaction to it is clear. Where does the responsibility lie? Industry is not entirely to blame for air pollution; in many cases it appears to be a minority offender. Hardly a person avoids being guilty of air pollution in one way or another. The motorist's exhaust loads the air with dangerous hydrocarbons. The air is fouled with gases from incinerators, heating furnaces, and cooking stoves. While industry is not a criminal at the bar, industrial pollutants are dangerous, and industry can and should take the lead in voluntary corrective steps.

Although there are many types of industrial air pollutants, a leading one appears to be the carbon monoxide fumes released and the hydrocarbons formed by industrial processes. There has been developed a successful process for eliminating these industrial pollutants, particularly, the hydrocarbon wastes, soon after they are formed. It operates basically by catalyzing these wastes into harmless effluents and energy.

The Catalytic Answer

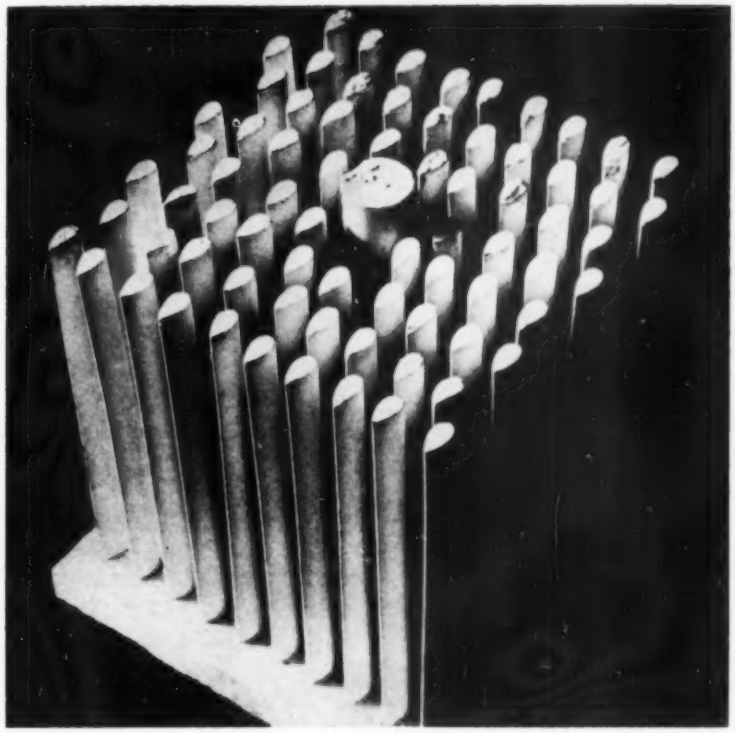
As long ago as 1936, the problem of protecting workers against pollutants in catalytic cracking plants was attacked with a catalyst. The catalyst did a good job for 2 or 3 months, but the amount of catalyst was very large. Making the gas go through the catalyst caused an appreciable pressure drop. Due to continuous variation of temperatures over a wide range in the reaction, the catalyst expanded and contracted causing erosion. The catalyst mass also acted as a net to catch dust particles, so that it became clogged and the reaction intensity lowered. The degree of elimination fell rapidly to 50 percent and finally the maintenance cost forced discontinuuance of the operation.

Today however, the inventor of that catalyst, Eugene J. Houdry, announces that the latest refined catalyst

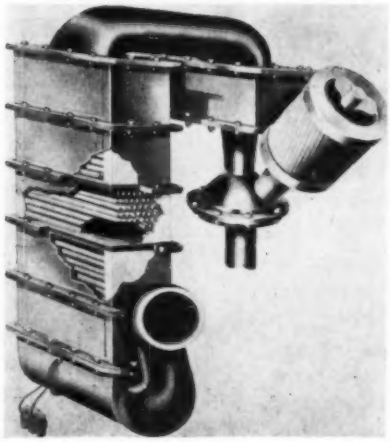
(Continued on page 36)

OLLUTION

THE CATALYTIC UNIT ➔

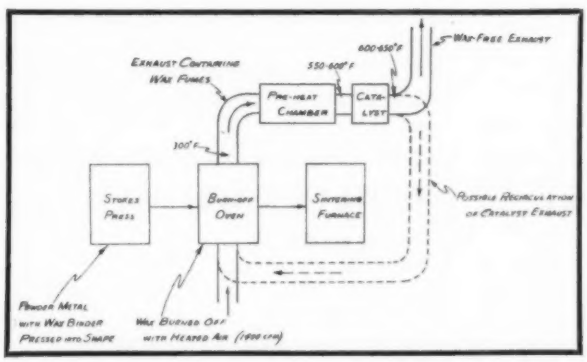


Oxidizing catalytic unit promises to revolutionize the handling of industrial waste. It is composed of 2 porcelain end plates and, between them, a spacer bar and 73 porcelain rods. Here, removal of an end plate reveals rods of tear-drop shape, which reduces resistance to gases blowing across them. The rods, unfinished here, will be coated with alumina and platinum alloy to catalyze engine exhaust or industrial waste gases on the coated surfaces. The catalyst can also save fuel.



Cutaway view of a catalytic exhaust, shows porcelain rods inside the unit are coated with a catalytic agent, which oxidizes carbon monoxide and other noxious gases to harmless carbon dioxide and water vapor. As engine exhaust enters unit it draws in air (to support combustion) through filter at right.

A workman puts the finishing touches on a catalytic bed. Installed in an exhaust stack of a metal decorating plant, the catalyst oxidizes noxious solvent fumes rising from a paint baking oven. Since the catalyst generates large quantities of heat in the process, it literally has made the plant run on its own smells.



Catalytic installation in ferrite plant removes nauseous wax fumes from burn-off oven. Heat formed by catalytic process can be used by recirculating catalytic exhaust as shown by dotted lines on chart.

NOISE — WHAT HOW TO AND

FEATURE

First of a series of feature articles on Industrial Noise Problems. Next articles will appear in the March and April issues.

By E. G. MEITER, Ph.D.*

WHAT is noise? It can be defined very simply for industry as "unwanted sound." The components of noise are the same as those of sound: intensity or loudness; frequency or pitch; and quality or timber.

The problem of noise in industry is neither new nor confined to any particular industry, but it is an important one. It has been recognized for a long time in industry that noise interferes in many important situations with communication by voice. Injury to hearing by loud sounds has been recognized since 1890 in the form of so-called "boilermaker's deafness."

During the past several years noise has received renewed attention from both industry and the medical profession, in the form of research and publicity. To the long list of occupational diseases and safety problems confronting industry has been added the noise problem. It is, therefore, important that we acquaint ourselves with the general aspects of the noise problem in industry and its solution by medical and engineering means.

Levels of Injurious Noise

The limits for injurious noise levels are still vague and uncertain and the entire noise problem requires additional research and evaluation. The answers to such questions as "How much is too much?" and "How often is too often?" are not yet available.

Some authorities agree that damage to hearing is likely to occur at noise levels above 90 decibels. We have to start at some level, and the 90 decibel level has been selected; at least, as a level at which one should become concerned about noise. At a recent conference on "Noise in Industry" attended by many competent investigators in the field, it was the unanimous agreement that we are not yet ready for standards in noise.

Other factors which must be considered beside the actual intensity of the noise are the total length of exposure, the length of exposure per period, whether the sound stimuli are continuous or interrupted, the length of interruptions, the type and space of environment with reference to reverberation, the age of the worker, and the presence of previous trouble with hearing.

How Is Noise Measured

The intensity or loudness of noise is measured by a sound level meter, or what is more commonly called a noise meter. It consists of a microphone, an amplifier, a calibrated attenuator, 3 frequency response characteristics controlled by 3 tabs, and an indicating meter.

The unit of sound measurement is the "bel" or, more conveniently, the "decibel" which is 1/10 of a bel. The higher the number of decibels, the louder the noise. A level of zero decibels represents roughly the weakest sound which can be heard by a person with very good hearing.

NOISE LEVELS OF FAMILIAR SOUNDS

Source of Sound	Decibels
Whisper	20
Low Street Noise	40
Conversation	60
Heavy Traffic	80
Critical Level	90
Subway	100
Airplane	120
Jet Engine	140

* Dr. Meiter is director of the industrial hygiene laboratory for a leading insurance firm.

IT IS... MEASURE CONTROL IT

The sound level meter measures only weighted or unweighted sound pressure. For a more complete description of the sound, measurements involving frequency and quality or timber are also necessary. Different types of noise have different effects on the hearing mechanism. It is generally believed that noise of high intensity is more injurious to the hearing when it is of high frequency, than when the frequency is lower. A locomotive whistle, for example, produces a sound of low frequency, while an air hose produces a sound of high frequency. Two sounds of the same intensity and the same pitch may vary appreciably in the annoyance they cause because of a different harmonic make-up or quality.

To obtain information on the distribution of sound pressure as a function of frequency, measurements are made with a sound level analyzer. Depending on the use to which the data will be put, the engineer may select one of 6 types of analyzers.

Detection of A Noise Hazard

It is recommended that the various plant operations be tested with an approved sound level meter, and that a record of the noise level be compiled by departments.

NOISE LEVELS OF INDUSTRIAL SOUND

Source of Noise	Range in Decibels
Spinners looms, lathes	80–95
Screw machines, punch presses, riveters, cut-off saws	90–95
Planers, routers, sheet metal, speed hammers	110–115
Drop hammers, chipping hammers	110–125

The noise level indicated here is that which is more or less continuously present and not the occasional high intensity noise which may occur from time to time. In the absence of a sound level meter, an approximate idea of the noise intensity may be obtained by walking through the plant with another person, having normal hearing, and trying to carry on a conversation. If shouting is necessary, the noise level is usually higher than 90 decibels.

Control of the Noise Hazard

The solution of the noise problem belongs both to engineering and medicine. In the field of medical control the audiometer is prominent. It is the most standardized method of testing hearing loss. This instrument produces sounds of the purity and intensity required to find the weakest intensity the person being tested can hear. The difference in decibels between this intensity and the intensity at which a person with normal hearing can just hear the same tone is the measure of the hearing loss of this person. Another frequency is then selected and the test repeated. A graph known as an audiogram is then plotted. Hearing loss in decibels is plotted against the log frequency. This gives a quick, accurate picture of the person's hearing acuity in the audible range.

Audiometer tests may be made by trained non-medical personnel. The hearing program, however, should be supervised by a physician. Routine audiometer tests at regular intervals are advisable in addition to pre-employment tests. As a further guide consult the Manual of Operation for an Industrial Hearing Conservation Program issued by the Committee on Conservation of

Hearing of the American Academy of Ophthalmology and Otolaryngology, which can be obtained from the Academy, 1136 West 6th Street, Los Angeles, California.

Turning to engineering control of noise problems, the most fundamental attack on noise hazards is the removal of the noise at the source. With good engineering design much noise can be eliminated, as a comparison between the noise made by old streetcars and subways and new ones, clearly shows.

Much unnecessary noise results from worn and improperly maintained machines. It is important, therefore, to keep machines in good operating condition. The solution of a noise problem in New York illustrates this principle very well. A rotary valve in food processing equipment produced a loud screeching noise due to rubbing on the valve housing. When the noise was called to the attention of the plant manager, the valve was ground down to a precision fit which resulted in the elimination of this source of noise.

Another method of noise control is to substitute a less noisy operation, if possible. Spot, arc or flame welding may be substituted for riveting in specific operations. Even a method applicable in only certain instances, such as this one, should be considered in reducing noise.

Frequently noise can be isolated so that its disturbing effect will be encountered by fewer people. A noisy machine may be removed from a room containing many people and placed elsewhere, exposing only the personnel necessary for the job. Well insulated partitions, and tightly closing doors should always be provided between a noisy room and adjoining areas.

If heavy machines are firmly bolted to concrete or wood floors, it frequently transforms the floors into huge sounding boards that not only amplify the original noise volume but help spread the noise through the entire building. The use of rubber or other resilient mountings will in most instances reduce both the vibration and noise. The use of resilient floor coverings further reduces the noise level.

Sound-absorptive materials are extremely useful for controlling noise in buildings. Hard surfaces, such as plaster and brick walls, reflect sound and cause reverberation. Sounds coming from all directions, as well as those coming from long distances apparently undiminished, are very annoying. The solution is the absorption of high frequency sounds by the application of acoustical materials. This consists of applying sound absorbents to ceilings and walls in the form of pre-fabricated acoustical tiles, acoustical plasters, sprayed-on compositions, and blankets which have been fabricated from very porous material such as glass wool. The problem of sound control by acoustical treatment is highly technical and help should be sought from experts in the field.

There are situations where, even after thorough sound control, the noise level may still be too high from the nature of the industrial operation, as in the testing of jet engines. It is necessary in such instances that the operators be protected with properly designed and fitted ear defenders which will reduce the intensity of the sound reaching the hearing mechanism. This is as necessary for the protection of ears as is the use of safety goggles for the protection of eyes.

Four types of ear defenders are commercially available. One type is that molded by the user. This kind of ear plug is a pliable ball of wax and cotton, molded by the user to fit his ears. Another type of ear defender is the molded rubber plug. It comes in several designs, which can be inserted into the ear canal. Another kind of ear defender is the muff type, which comes in two designs. One consists of a spring head-band to which is attached a pair of muffs made of sponge rubber and plastic, which fit over the ears. The other variety consists of a spring head-band to which is attached a pair of soft pliable plugs which fit inside the ear canals. The plugs are lubricated before insertion in the ears. The last type of ear protector is the air valve. It is an ear filter made of non-corrosive metal and soft rubber. The manufacturer states that, when placed in the ear canal, the valve admits conversational tones but automatically closes and protects the inner ear from pressure caused by sudden loud noises.

The amount of protection from noise offered by good ear defenders varies somewhat with design, and may be considered to be in the approximate range of 25 to 30 decibels. Under conditions of extreme noise a combination of both the ear plug and muff may be worn, giving superior protection to either device when used alone.

In general then, it may be concluded that the noise hazard is recognized and that the engineering phases of the problem are fairly understood. The physiological aspects are not fully understood, but researches are now in progress to bring about a much better understanding of this phase of noise control.

From an address delivered at the 21st annual Greater New York Safety Convention.

Picture by courtesy of Frank H. Gibbs.

An Answer to Air Pollution

(Continued from page 32)

occupies only a fraction of the old catalyst's space, has a negligible pressure drop, does not permit dust accumulation, and cannot have its surface destroyed by erosion. After 10,000 hours operation one particular installation has retained 99 percent of its eliminating power.

Heart of the catalytic system is the cartridge of spaced porcelain rods, coated with a catalytic agent, catalytic alumina and platinum alloy. As the dangerous fumes flow across the surface of these rods, they are oxidized to harmless effluents. The present catalyst is said to be able to burn just about any vapor or gas that can be oxidized. It is most effective on gases that can be oxidized to either carbon dioxide or water vapor or both. This includes the entire family of hydrocar-

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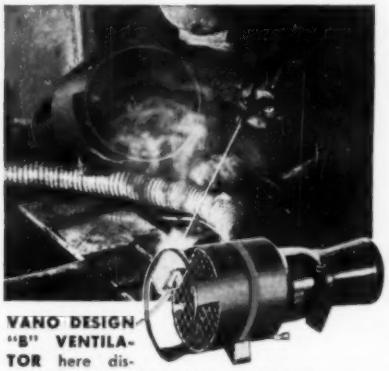
Improve workers' safety . . . health . . . comfort . . . efficiency

VANO DESIGN "A" VENTILATOR is used here during repairs to a chemical still. This type ventilator is used to ventilate tanks, tank cars, drums, vats, underground cable manholes, pipe galleries, airplane wing compartments, fuselages and other confined places. Uses 8" diameter flexible canvas tubing ("Ventube").



VANO DESIGN "B" VENTILATOR here discharges welding fumes from double-bottom compartment in naval vessel under construction. Large volume of air handled quickly expels fumes and results in good ventilation. Vano Design "B" can pass through opening only 14" in diameter. Uses 8" diameter flexible canvas tubing ("Ventube").

VANO DESIGN "C" VENTILATOR here withdraws fumes from a reactor kettle. This ventilator can be furnished with 8" suction inlet for 8" non-collapsible suction tubing — or multiple inlet nozzles for 5", 4", and 3" suction hose. The discharge may be connected to 8" "Ventube." Capacities furnished on request.

NO. 2 AEROPLANE HEAT KILLER here directs cool, fresh air on worker in drop forge plant. Heat killers restore workers' efficiency by providing extra ventilation in the hot months, or on any job where workers are continually or periodically required to work in excessive heat. Available in two types, three sizes in each.

VENTAIR DESIGN TE-4 VENTILATOR Gasoline Engine Driven, here delivers air into underground manhole. These ventilators provide fresh air to men in confined places, promoting safety, comfort, and increasing efficiency. Ideal where no electric current is available. Delivers 1700 CFM of fresh air. Uses 8" diameter flexible canvas tubing ("Ventube").

PORTAIR NO. 4 BLOWER EXHAUSTER exhausts fumes resulting from soldering, welding, tank coating, is also used in ventilating small tanks. It is designed to permit attachment of 4" flexible metal hose. Capacity: 425 CFM free air.

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Please send me information on supplying fresh air to men working:

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- ☐ motors, generators, switchboards
- ☐ wires and sheets
- ☐ general man cooling
- ☐ around cracking stills
- ☐ exhausting welding fumes
- ☐ stirring up stagnant air wherever men are working or material is drying
- ☐ drying of walls, sheets, etc., after treated with coating material

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Company .....

Address .....

City .....Zone....State.....

Write here any special ventilating problem you may have { _____ _____

(For further details, use Key # O-16 on free Inquiry Card on page 75)

bons, as well as carbon monoxide. The catalyst will also work effectively on organic sulphides, chlorides, bromides and the organic nitrogen compounds. These last reactions, however, may involve the formation of acids or other compounds which themselves are slightly odorous, such as sulphur dioxide. The addition of simple water scrubbers will remove these objectionable odors. The catalyst will also remove burnable solids such as carbon black, power plant soot, incinerator particles just as long as the catalyst temperature is kept close to 1500 degrees F.

This last condition can be met if there are sufficient combustible gases present with the solids to raise catalyst temperature that high, or if the catalyst is installed at a "hot zone" in the furnace or incinerator. Inlet temperatures can range from room temperature or less up to 1500 degrees F. or more. In some cases preheating the gases may be necessary, depending on the inlet temperature and concentration of pollutants. If the gases are above 500 degrees (the oxydizing point of the catalyst) and are rich in combustibles, no pre-heat will be needed. If the gases are rich in combustibles but below 500 degrees, some pre-heat will be needed at start-up only. If the concentration of combustibles is not high enough to maintain catalyst temperature above 500 degrees, continuous pre-heat will be required. Since the catalyst often liberates heat in the process of burning impurities, a system can often be worked out to pipe the heat back to the entrance of the catalytic chamber and use it to pre-heat the vapors to be catalyzed.

Catalytic Applications

The number of processes to which the catalyst can be applied to combat air pollution is very large. Solvents such as ketones, naphthas, xylene, toluol, and mineral spirits have all been successfully catalyzed. Metal decorating ovens have had dangerous fumes removed; a burlap coating plant has been able to remove naphtha fumes and use the released energy to run this and other plant processes. Wire and plastic coating plants have also successfully controlled their gaseous wastes with the catalyst. In the oil industry several installations have been made at refineries and on "cat" cracking plants. In each instance the catalyst is rapidly paying for itself.

A case of a different nature was the problem of paraffin fumes driven off from a burn-off oven in the powdered metals section of a ferrite plant. A catalytic installation removed the acrid wax smoke fumes and the fire hazard of pockets of the wax fumes collecting above the burn-off oven. The catalyst's first use in the food industry removed a nauseating effluent of coffee oil, coffee bean skins and steam from a coffee-roasting plant's stacks. Gases driven off in the destructive distillation of wood and coal can be successfully oxidized by the catalyst, too. A recent installation to kill odors rising from charcoal making has been made, and a similar application can be made to coke forming.

The catalyst has been used in steel annealing ovens to complete the combustion of coke oven gas and remove the hydrogen sulphide fumes previously vented to the outside air. Still another potential use of the catalyst in the steel industry is for oxidation of blast furnace gases. Incinerator smoke and odors are susceptible to the catalyst. A compact packaged catalytic incinerator that can be quickly and simply installed for smokeless burning of rubbish has been developed.

An application of the catalyst that cuts across all industries is the removal of noxious exhausts from fork lift trucks and other in-plant vehicles and combustion motors. The engines of these trucks and other combustion motors give off carbon monoxide and hydrocarbon fumes, a serious hazard in poorly ventilated plant areas. A compact catalytic muffler that completely oxidizes the harmful exhausts has been perfected. More than 2000 of these units are now in use on in-plant fork lift trucks, dump trucks, floor sweepers, portable welding machines and stationary gasoline engines. At present, the catalyst operates on engines using white (unleaded) gas only. A catalyst for leaded gasoline, which incidentally, could be applied to the country's 50 million automobiles, is now being tested after 6 years of development. A catalytic exhaust for diesel engines, based on the successful 2-year performance of a prototype muffler on a diesel dump truck in an underground mine, is also being developed.

Industrial truck catalytic mufflers are now being offered factory-installed by several truck manufacturers. At least one floor machine company also makes a catalytic muffler available optionally on its industrial sweeper. Replacing the regular mufflers with catalytic mufflers has turned the carbon monoxide and hydrocarbons poured out by industrial trucks into harmless carbon dioxide and water vapor.

In one instance, gasoline-powered mobile equipment is being used deep inside the holds of iron ore ships without exposing operators to exhaust fume hazards, because of the equipment's catalytic mufflers. In another typical use, catalytic mufflers were installed on gas-powered trucks in the storage area of an abrasives manufacturer. The use of the trucks saved much time, space, labor and costs, but without the mufflers their use would have been impossible in the poorly circulating atmosphere of the storage warehouse. By purifying the engine exhaust, the catalytic units prevent not only the physiological symptoms of carbon monoxide poisoning: headaches, nausea, eye irritation, drowsiness and fatigue; but also dangerous psychological symptoms manifested by loss of reasoning power. Safer working conditions are the inevitable result.

Here then is an answer to air pollution: a catalyst which removes dangerous pollutants, especially carbon monoxide and the hydrocarbons, at the source as soon as they are formed. It has been used on many and varied industrial processes and promises to be effective in many new applications. In particular, it has proven to be a very valuable air pollution deterrent when used on stack vapors and industrial truck exhausts.

Pictures by courtesy of Oxy-Catalyst, Inc.

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Made in black or brown
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"What's the Law?"

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20 WEEK TOTAL DISABILITY

A NEW HAMPSHIRE court decision states that when silicosis and other dust diseases arise out of and during the course of employment, no compensation will be paid for partial disability.

This steel grinder's work consisted of grinding steel and cast iron with an electric hammer and wheel. This process produced enough dust to require the use of masks. He worked at this job for some time and finally was obliged to leave his employment because of an illness diagnosed as silicosis.

The court ruled that since the steel grinder was able to return back to work at a gainful occupation, some 20 weeks after the date of leaving his employment, an award for total disability be paid for only the 20 week period. *(Colantonio v. Kingsbury Machine Tool Company: New Hampshire Supreme Court, No. 4001, April 3, 1951.)*

NURSE CONTRACTS POLIO

A HOSPITAL was short of employees to maintain the institution. The nurse in question had to put in long hours of fatiguing work and was exposed to actual physical contact with victims of polio. After 2 months' work in the ward, she contracted the disease herself.

In her claim for compensation, the hospital agreed that she was on the job and that the disease arose from her employment; but they claimed that there was no accident —no fall, or blow, or anything of that nature. Therefore, they contended that compensation should not be granted.

The court dismissed this contention stating that nothing more is required than that the harm that the nurse sustained shall be unexpected. The accident is there, when there is a causal connection between the conditions under which the work is required to be performed and the resulting injury. The nurse's claim for compensation was upheld. *(Industrial Commission v. Corwin Hospital: Supreme Court of Colorado, October 6, 1952.)*

DOUBLE DANGER

WHILE working on an exhaust fan motor in the basement of a diner, the claimant, a repair and maintenance worker, suddenly lost his balance. In the attempt to right himself, or cushion his fall, his left foot struck the switch of the fan causing it to operate. He held up his left arm to prevent injury to his head and in doing so, caught his hand in the unprotected blades of the fan.

Lack of a protective cover over the fan blades or a safety switch for the fan motor caused the claimant to suffer severe lacerations of the wrist and amputation of fingers. This claim was settled at an informal hearing on the basis of 90 percent permanent disability of the left hand. *(Taylor v. Shirley's Diner: N. J. Department of Labor and Industry, Division of Workmen's Compensation, Informal Hearing Court, Jersey City, N. J., March 22, 1951.)*

PRE-EXISTING CONDITION

AN AUTOMOBILE worker employed by a motor company was required to assist a fellow employee in unloading a heavy safe from a truck. While he was in an awkward and unusual position, the safe unexpectedly slipped and fell, wrenching his back. He continued to work without losing any time or pay. The employment continued until the employer terminated his business 1 month later. The injured auto worker then went into the garage business for himself.

He filed a claim for compensation for the injury sustained while in the employment of the motor company. He stated that since the injury, he was only able to do light work. He admitted that he had drawn compensation for back injuries on 2 previous occasions.

The court held there was no causal connection between the previous spinal conditions; and, since the claimant had lost no time or wages, he was not entitled to compensation. *(Anderson v. Northwestern Motor Company: North Carolina Supreme Court, No. 240, March 28, 1951.)*

PERSONAL ARGUMENT

THIS man was employed as a factory worker. It was the practice of the employer to present each employee with a personal locker for his street clothes. These lockers were the property of the employer and in no way were they to be altered by the employee. One afternoon, this man went to his locker to get something and noticed that some very offensive language had been written on the door. He charged a fellow employee with writing the words. In the ensuing argument, this factory worker drew something from his pocket which the other employee believed to be a knife. The other employee picked up a rake and gouged his arm.

The accident occurred during the course of employment, but the injuries were the result of a personal quarrel between the two men which did not originate in the employment. This factory worker asserted in his claim that he was solely prompted by an impulse to protect his employer's property from defacement.

(Continued on page 44)

IMPROVED No. 90A Series
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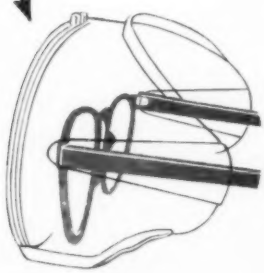
Wider, Deeper Frame Gives Greater Clearance Over Spectacles

We've taken the popular Willson MonoGoggle® design and made it with a deeper and wider pliable, transparent *vinyl* frame with grooves molded into the sides for extra roominess over glasses. It provides protection against light impact hazards on such operations as spot welding, buffing, wood working and chemical handling.

Workers who wear prescription glasses—even the new, big plastic frames—will welcome its extra roominess. Transparent frame is tinted light green to keep out glare, but admits adequate side light. Clear or green plastic lenses are securely held in place by a deep channel and closed "tab pocket".

Ask your Willson distributor to show you the new No. 90A Series MonoGoggles, available with either direct or indirect ventilated frames or non-ventilated styles. Or write for bulletin.



Side view shows molded-in grooves in sides of frame provide ample clearance for spectacle temples—removes interference with eye glass comfort.

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INSIDE PAGES
(pages 2 and 3)

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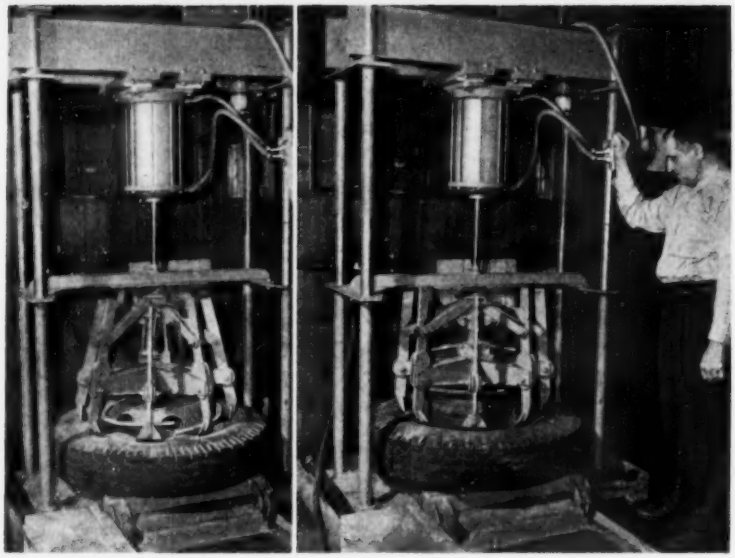

The Other Side of the Coin . . .

IN THE May, 1953 issue of SAFETY MAINTENANCE & PRODUCTION we saluted the design of a successful tire mounter by the Autocar Company. Now the company's engineers have come up with a necessary device to do just the opposite of the tire mounter—a tire demounter.

Like the tire mounter, the new demounter results in safer, quicker and more economic one-man operation. It is basically an 8-armed spider mounted on a suspension frame and operated with a 12-inch diameter, 12-inch stroke 90-pound pressure air cylinder. It can take off the biggest and toughest sticky tire with the ease of a doughnut hole puncher.

The wheel and tire, with locking ring up, are placed on a platform dolly which is rolled into position. The spider, mounted on a cross-piece which goes up and down on a frame of 2-inch tubular steel, is lowered by compressed air against the tire.

The 8 arms, which have 4-inch wide fingers, press in toward the center of the wheel and force the tire down so that the locking ring is easily pried loose. The spacing of the 8 arms is such that there is no danger to the side wall.

When the locking ring is removed, the spider arms are raised, the dolly pulled out and the wheel and tire turned over. It is then rolled under the spider arm again and, when the arm is forced down, it knocks the tire clear of the rim all the way around. The whole operation takes but a few minutes—saving money, time and tempers.

Pictures by courtesy of the Autocar Co.

What's The Law?

(Continued from page 40)

The court held that Willis' act was solely to gratify his feeling of anger or hatred and that the injury did not arise out of employment but was the result of a personal quarrel between the two men. *(Willis v. Taylor and Fenn Co.: Connecticut Supreme Court of Errors, April 3, 1951.)*

NOXIOUS GASES CAUSE DEATH

THIS worker was employed by a mining company as a hostler on a coal cutting machine. While performing his regular duties, an electric cable attached to the machine caught fire and it became necessary, in order to continue production, for him to splice and repair the cable in a room filled with smoke emanating from the burning rubber insulation. After making the repair, he came out of the mine coughing violently.

The coughing continued during the night and he complained of a burning sensation in his throat and a pain in his neck. He was unable to swallow solid food. He worked 3 shifts thereafter, but was ordered to the hospital by the company doctor. There the doctor diagnosed the ailment and treated him for a sore throat. Nine days after the fire he died. Death benefits were awarded the widow. *(Blue Bird Mining Co. v. Kelly: Kentucky Court of Appeals, March 9, 1951.)*

Tips for Eye Care

MODERN science is finding new ways for us to live longer and happier, but it still hasn't found a way to create new eyes for us. Fred W. Jobe, director of ophthalmic research for a leading optical company, made this comment in offering a set of simple rules for helping our eyes help us see.

Jobe pointed out that every week more than 400 Americans lose their sight. Probably over half that number could be avoided if people would learn more about their eyes and how to care for them.

If you need glasses, Jobe stresses, remember that one pair of glasses is not enough to answer all your visual needs. Today there are special purpose glasses to suit every job, including types with impact resistant lenses for use where eyes hazards exist, special sun glasses for protection from sun glare, and frames and lenses to meet every need around the clock.

In discussing eye care, Jobe offered these rules:

1. Do your reading or other close work under a comfortable light coming from above and behind. Be sure to keep a comfortable position

(Continued on page 69)

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INSIDE THE TRADE

Walter B. Templeton, 1872–1953

WALTER B. TEMPLETON, 81, founder and formerly chairman of the board of Templeton, Kenly & Co., Broadview, Ill., manufacturers of Simplex mechanical and hydraulic jacks, is dead.

A native of Chicago, Mr. Templeton formed the jack company in 1899 with the late W. K. Kenly. He served as president of the company for 40 years until 1939 when he was named chairman of the board.

Material Handling Institute Elects

MANUFACTURERS of material handling equipment (hoists, conveyors, electric and gasoline industrial trucks, shovels, cranes, wheeled and castered equipment, batteries, strapping, monorail systems, containers, pallets and powered hand trucks) have elected Charles B. Elledge of General Electric Company, Schenectady, N. Y., as president of The Material Handling Institute, Inc., for 1954.

The election occurred at the annual meeting of the Institute in New York City. To help Elledge administer the educational work and services of the trade association, Walter E. Schirmer, vice-president, Clark Equipment Company, Buchanan, Mich., and Edward W. McCaul, secretary, Jervis B. Webb Co., Detroit, Mich., were elected as first and second vice-presidents, respectively. Elledge succeeds Howard M. Palmer of Lewis-Shepard Products, Inc., Watertown, Mass., 1953 president, who will now become a director of the association.

Elledge is currently manager of materials handling industries sales, General Electric Company, Schenectady, N. Y. He was graduated from Alabama Polytechnic Institute in 1932 and has been with General Electric since 1934. He served as a director of the Institute for 2 years prior to his election as first vice-president last year. The Institute will continue its program of aid to industry by sponsoring exhibitions, conferences, publications and committee activities aimed at promoting greater efficiency and effectiveness in material handling, acquainting top management with its importance, enlisting the interest of young engineers in a career in material handling, helping colleges to organize courses in this subject.

New Stop-Fire Development

STOP-FIRE, Inc., fire extinguisher manufacturer, Brooklyn, N. Y., has been awarded a contract by the U. S. Air Force for the development of a new type of fire extinguisher for air base ground operations.

The new fire extinguisher will be of the wheeled-type, 10 and 20 gallon capacities, but will employ stored pressure for extinguisher operation and chlorobromomethane as the fire extinguishant. This represents a radical departure in wheeled-type fire extinguisher design, according to company officials.

American Allsafe Appoints Sales Engineer

THE appointment of John O'Malley as sales engineer to handle sales and service on various safety and industrial products has just been announced by Lee C. Churchill, Sales Manager of American Allsafe Co., Inc., of Buffalo, N. Y.

New Distributor for Beryllium Corp.

THE Beryllium Corporation, Reading, Pennsylvania, announces the appointment of Scientific Industrial Supply Company, 2958 South Vernon Avenue, Chicago 16, Illinois as warehouse distributor of Berylco beryllium copper nonsparking tools. With the appointment of Scientific Industrial Supply Company, users of nonsparking tools in Chicago and the adjacent areas of Illinois, Wisconsin, Northern Indiana and Western Michigan now have available a nearby source of supply from warehouse stocks.

Silicone Paper Appoints

THE Silicone Paper Company of America, Inc., manufacturers of safety lens tissue and equipment, announces the appointment of Albert W. Bullwinkel, formerly of the Westinghouse Electric Corporation, as vice-president in charge of production. Mr. Bullwinkel will coordinate all plant facilities in Rochester, N. Y., Durham, Conn., Lee, Mass. and Hackensack, N. J. through the corporation's general office at 230 Park Avenue, New York, and is likewise in charge of current expansion developments in the chemical as well as the silicone paper manufacturing field.

Luckey Joins Welsh Mfg. Co.

E. N. LUCKEY, widely known in the eye and face safety equipment industry, has been appointed Director of Industrial Sales at Welsh Mfg. Co., Providence, R. I., according to an announcement by Thomas Johnson, President of the company.

Mr. Luckey has been identified with the distribution of industrial eye and face protective products for 27 years. He most recently was Sales Manager of the Dockson Corp. in Detroit and President of the Industrial Safety Equipment Company in Baltimore.

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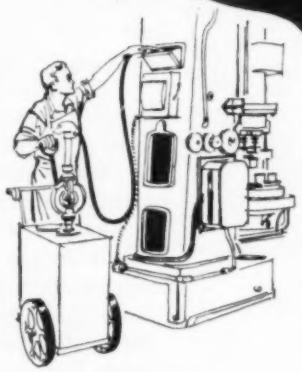

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The Industrial Nurse

Editor
Rosamond J. Webster
R.N., A.M., Ph.D.

The Age Problem

SERIOUS questions are being raised concerning what has come to be a fairly fixed pattern in industry—compulsory retirement at age 65. That this is not peculiar to our own country is evidenced by a recent report that Cambridge University in England has raised retirement age to 67 years. The age limit apparently was set in the United States in depression times when there was a substantial surplus of manpower.

Our age span is steadily increasing. One out of every 9 Americans will reach 65 or more years within the next generation. In 1950 it was computed that the ratio was one in 12. The gap between the age of retirement and death has also increased. The results of a policy of fixed retirement age can be costly in manpower and in payments into pension funds by both employers and workers. The longer an individual works after this fixed retirement age, the greater will be his eventual benefits and the lower the costs of enforced idleness for all concerned.

Greater flexibility on all retirement plans, both governmental and voluntary, would help in dealing with what has already become a distinct social problem. Industrial medical departments will possibly have additional responsibilities with the retention of older workers, but the total social welfare might be well-served. In the meantime, careful record-keeping of the work experience and health status of older workers will be of help in making decisions.

Does It Pay?

THIS is a common question in industry when establishment of a medical department is under consideration. Various studies have shown that such a service repays the employer in many ways—in preventing accidents, in hiring competent workers, in reducing workmen's compensation and other costs, and in improvement of production schedules.

Among the earliest studies on industrial medical departments were those made in the transportation industry. A report on the effectiveness of a medical department serving several thousand men in a unit of New York's private transportation system brings out several important points. During the 6 years in which the medical service has been in operation, vehicle accidents have dropped by more than half. The *overall* accident rate has been almost cut in two. Several hundred thousand dollars have been saved in workmen's compensataion and liability costs. The program has reduced the total cost of sick benefits, employee compensation and medical department expenses.

How have all these desirable results been achieved? The answer is simple. There are 3 major steps in the medical department program: (1) Rigid pre-employment examinations, geared to the specific needs and recognized hazards of public transportation on crowded streets; (2) extended medical services for all employees, reaching into the home; and (3) regular medical check-ups. The minimum physical requirements usually disqualify 35 percent of employment applicants. Since the training of one new worker may cost the employer as much as 500 dollars, it is evident that mistakes and oversights on the part of the medical department could turn out to be costly affairs.

While these data refer primarily to a city transportation system, any industry requiring workers in excellent health and subject to high accident potentials will find that medical service pays off. One way to prove a case in point, is for persons already employed in industrial medical departments, and this includes industrial nurses, to keep careful records.

The Scope of Industrial Hygiene

A GROUP of leading industrial hygienists has prepared a statement covering the duties and responsibilities of those who serve industry in that technical field. A reading of this report should help industrial nurses and others gain a fuller understanding of what is involved in their own duties and in the problems of health requiring constant consideration.

The industrial hygienist, reads the report, should: (1) Observe and examine the occupational environment; plant and community air, with sampling, analysis, and other measurements; ascertain their relation to the health of persons employed by and residing near the industry. This analysis of the environment includes not

only air contaminants but also physical factors and stresses that are hazardous to health. (2) Evaluate and interpret the possible and probable effects upon employees of the materials and stresses found, generally in cooperation with the industrial physician. (3) Advise on methods of rectifying or controlling adverse environmental conditions found and explain these methods in appropriate terms and in sufficient detail so that persons responsible for their execution (this may include the physician and industrial nurse also) will be able to act.

The industrial hygienist will make his work more productive by establishing good relations with plant personnel responsible for employee health and safety. His primary responsibility is to protect the health of workmen. He must have the ability to recognize and evaluate situations of hygienic interest, to differentiate between normal and staged operations. He should seek new and better methods of recognizing and evaluating environmental stresses and improving the relationship between men and machines.

This is a practical outline for the industrial hygienist. However, many small plants do not have such a professional person on their payrolls. Some of this responsibility then falls upon the medical department, with the major tasks of observing conditions, noting complaints of ill-health or increased absenteeism and bringing the pertinent facts to the attention of management.

Objectives of Occupational Health

AN INTERNATIONAL group of experts convened by the International Labor Organization and the World Health Organization in Geneva Switzerland in 1950, agreed that: Occupational health should aim at the promotion and maintenance of the highest degree of physical, mental, and social well-being of workers in all occupations; the prevention among workers of ill health caused by their working conditions; the protection of workers in their employment from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological equipment; and the adaptation—as far as possible—of work to man and of each worker to his job.

Some of the effective steps that can be taken to carry out this program were noted: (1) provision of a good nutritional program through plant facilities and various educational measures; (2) control of communicable diseases, insofar as this is possible in the plant; (3) protection of the health of working pregnant women; (4) mental health programs, including various educational, diagnostic and advisory facilities; (5) environmental sanitation; and (6) a well organized and effective health education program.

It is evident that it would not be practical, with but few exceptions, to expect employers to carry out such complete programs by themselves. While plant physi-

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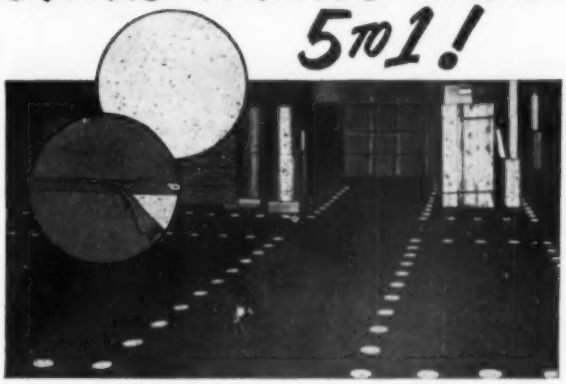

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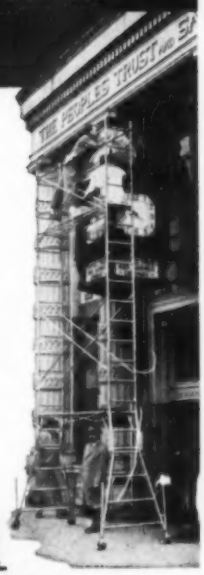

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cians, industrial nurses and safety engineers can take an active part in some areas, the help and cooperation of various governmental and communal agencies will be required to put some aspects of the total program into effect. For the industrial nurse, the job may be that of learning what technical help is available; how this can be called upon and utilized; and how to cooperate effectively with in-plant facilities and community agencies in adequately serving the workers.

That is why in health instruction all available media are used by professional health educators—the spoken word, pamphlets, posters, placards, exhibits, motion pictures, and other media. It is not enough to tell a worker or a group of workers something about food values, calories, carbohydrates, proteins, etc. When they go home to their families and attempt to pass on the information confusion is further confounded. If language difficulties and regional food and other customs are involved in a local situation, the problem becomes more complicated. Education of the ailing or injured worker, or preventive instructions are essential, but the job must be well done.

Traumatic Neuroses

THE problems presented by traumatic neuroses often challenge the best diagnosticians in various branches of medicine. A worker may be involved in a minor accident, with subsequent claims that he has been injured severely. He reports inability to work, even though careful examinations by a competent neurologist and other specialists rule out any possibility of physical injury. The task, from a medical point of view, may then become that of a psychiatrist, to determine what the real root of the problem may be.

For a clear understanding of the function of modern psychiatry, the following outline indicates the 4 major areas with which this branch of medicine is concerned: (1) Psychoses (organic or functional)—involving more severe mental and nervous symptoms characterized by the distortion of reality in one or more spheres. (2) Neuroses—Emotional conflicts which may organize around underlying injury to the nervous system but in general have no organic basis. (3) Psychopathic personality—A somewhat questionable diagnosis currently applied to behavior disorders involving supposed character and developmental faults, with repeated, antisocial acts. (4) Psychosomatic complaints—Every situation, every accidental injury or disease which affects the human organism operates to produce both somatic (or corporeal) and psychic (or emotional) reactions.

Recognition of this last area has opened up new concepts of psychosomatic medicine, with much attention necessarily emanating from those concerned with industrial accidents and diseases. All who come in contact with possibly injured and ailing workers—management, supervision, safety, medical, nursing, personnel—have a stake in the recognition of traumatic neuroses. The industrial nurse must often be the interpreter to those less learned than she in medical matters. But no rule-of-thumb should be applied. The real job of diagnosis must be left to competent medical specialists.

The Physically Handicapped

TO SERVE the physically handicapped, a number of voluntary agencies have functioned at local, state, and national levels for many years. The President's Committee in Employment of the Physically Handicapped includes important federal officials. These number the Secretaries of State, Treasury, Defense, Interior, Agriculture, Commerce, Labor and Health, and Education and Welfare among them. The Chairman of the Committee is a distinguished retired naval medical officer, formerly Chief of the naval medical services. This all points to the fact that, while much remains to be done for our handicapped men and women, they are very much the concern of the country.

A team of writers, considering the physically handicapped person and his attitudes, draws the following conclusions: (1) Physically disabled persons more frequently than normal persons exhibit behavior which is commonly called maladjusted. In almost every study, however, 35 to 45 percent of the disabled are reported to be as well or better adjusted than the average non-disabled person. (2) The kinds of maladjusted behavior exhibited by physically disabled people are not peculiar to them; they are similar to those shown by non-dis-

abled people. (3) There is no evidence of a relationship between kind of physical disability and kind of behavior; within a wide range of physical disabilities, the behavior results do not differ. (4) It is probably true that persons with a long history of physical disability are more likely to exhibit behavior maladjustments than those with a short history of disability.

A change of attitude and the relative ease or difficulty with which such a change can be accomplished will vary with the individual and depends upon a number of factors. Important among these are the attitudes of supervisors, fellow workers, medical and industrial nursing personnel. Of course, it is neither possible nor desirable to coddle or show favoritism to the handicapped employee. If properly placed after adequate rehabilitation, he should be able to hold his own. But the personality factor will come to the fore in some cases, and it is then that attitudes of the industrial nurse and others can come to play an important role in adjustment of the handicapped.

Coronary Disease

THE director of a physiology research laboratory notes that there is reason to doubt whether, with presently available information, the early diagnosis of coronary disease will greatly change its eventual course and outcome. The basic lesion in almost all cases of coronary heart disease is caused by deposit of lipids or fats in the walls of the coronary arteries. Once thoroughly established, these deposits are nearly, or perhaps totally irreversible. Therefore, the real focus of attention for the control of coronary disease must be the problem of preventing these deposits from developing—to stop the disease before it starts.

This research worker in one of our leading universities holds that there are enough good reasons to suspect that our present high-fat diet in the United States is not favorable to the health of adults; even though it is premature, on the basis of present knowledge, to blame this diet for all excessive mortality from heart disease. The changes in mortality in countries forced to alter their diets during World War II seem to point up this matter. These changes conformed to the concept that the proportion of fat in the diet is closely related to the development of arterio-sclerotic heart disease. Changes in diabetes mortality among patients over 45 years of age, notably related to arteriosclerosis, were equally marked during the war.

Since butter constitutes only about 5 percent of the total fat calories—cooking and other oils provide 45 to 50 percent—it should not be too uncomfortable for overweight people to reduce the total fat intake and still have a diet excellent in all other respects. These findings of laboratory and statistical research should prove to be excellent talking points for the industrial nurse deal-

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The PIONEER Rubber Company
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N-54 heavy weight all neoprene 14" length. Curved fingers, Super-Safe grip.
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PROTECTIVE MASKS

PLACE HEAD BAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
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Weigh less than ½ ounce. Afford excellent protection against non-toxic dusts, except free silica. Replaceable cotton pads are inexpensive and sanitary.

Martindale Protective Masks ..... $.30 ea.
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Masks packed individually. Refills packed 25 to envelope. No. 2 (heavy-weight) Refills contain twice as much filtering cotton as No. 1.

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PRICES—NET, FOB CLEVELAND

2 to 5	$1.55 ea.
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Send for new 64-page Catalog 29 of Maintenance, Production and Safety Equipment.

MARTINDALE ELECTRIC CO.
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Here's an AMAZING BRAND NEW SAFETY SIGN that will be welcomed by Safety Men! Brady Safety Signs stick to wood, glass, metal, concrete, etc. without moistening. May be applied to any clean surface in a jiffy. No screws, nails, bolts or skilled help necessary. All you do is peel from card, apply where wanted and the sign is up to stay.

Brady Safety Signs are made of durable cotton cloth, Silicone Coated to resist dirt, grime and moisture. CONFORM TO ASA Standard Z35.1-41. Select your requirements from a complete catalog of standard safety messages. Cost only a few cents per sign. Immediate delivery. Specials made to order.

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W. H. BRADY COMPANY

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ing with obese individuals, though the final source of advice on dieting should be the plant or personal physician. See the American Journal of Public Health for November 1953 for further details.

Looking at Workmen's Compensation

PRINCIPLES of the International Association of Industrial Accident Boards and Commissions covering medical care of injured workers deserve careful study. They read as follows: (1) A recognition of the necessity for more adequately trained and skilled medical and surgical care of injured workers. (2) A recognition that medical aid to injured workers should not be limited by cost or other legal prohibition. (3) A recognition that the goal of medical aid in compensation cases is prompt recovery, minimum residual disability, maximum physical restoration, and preparation of the injured workers for resumption of gainful employment. (4) A recognition that laws should place direction of medical aid in the hands of compensation administrative authority. (5) A recognition that rehabilitation must begin with first aid and continue throughout the period of disability; that in order for a physician to carry out his responsibility under workmen's compensation it is basic for him to consider the total medical problems, including preparation for the injured worker's return to work; that the physician must bring to bear on these problems all of the skills and disciplines that science and society can offer and utilize all community resources for the accomplishment of such objectives. (6) A recognition of the necessity for close association and cooperation between the compensation administrative agency and the state and local medical groups (a) to procure and give attention recognized in item 3; and (b) to secure written reports and advice necessary for the administrative agencies' case records. (7) A recognition for the need for more expertly trained and better informed physicians in traumatic surgery, occupational medicine and physical medicine.

While a number of the preceeding items can have but little, if any, interest for industrial nurses, it is well for them to be aware of the high standards being set for others concerned with the injured worker. Concern with rapid recovery, rehabilitation and easy return to work are of interest to all.

New Pressures

WRITING upon the subject of industrial medical service by private practitioners of medicine, an Ohio physician notes the development of several types of economic pressures within recent years. Some have arisen out of new solutions to labor-management conflict, while others have been stimulated by statutory provisions for payments to employed persons temporarily disabled from any cause. These pressures are: (1) the importance of "fringe benefits" provisions in labor contracts; (2) the growing tendency of labor organizations to establish medical programs operated entirely at employer expense; and (3) compulsory state disability compensation laws.

The practice of liberalization of "fringe benefits" by collective bargaining has expanded, providing economic advantages to workers in lieu of actual wage raises. These provisions usually include pension plans with a provision for premature retirement in case of permanent disability, hospitalization, surgical insurance, and the payment of at least partial wages during periods of temporary disability from any cause. An estimate by the U. S. Chamber of Commerce places the cost of "fringe benefits" at about $644 per employee per year. In administering any industry in which these various types of benefits are involved it is readily evident that competent medical advice is essential. Labor unions have become increasingly health conscious, with the setting up of health facilities for which employers largely pay the bill, or to which they make substantial contributions.

All these items stress the need for increasing numbers of well trained physicians to take part in industry's medical activities. For small plants, the part-time physician who is in general practice, has a part to play. The medium-sized plants with several hundred workers may find it profitable to employ an industrial nurse as well. Perhaps a little bit of "selling" is needed from those concerned with industrial health.

SAFETY ACHIEVEMENTS

THE Santa Clara, Calif. plant of Owens-Corning Fiberglas Corporation had the best safety record in 1952–53 of any major plant manufacturing mineral wool products in the nation. The award is made annually by the National Mineral Wool Association to the plant with the least time lost due to accidents. The Santa Clara plant had a record of 2.97 accidents per million manhours worked. The average for the industry was 12.98 for the period June, 1952 to June, 1953.

AMERICAN Cyanamid Company's Director of Safety and Fire Prevention, Stanley F. Spence, announces that two Cyanamid plants have earned Company awards for outstanding safety records. A Cyanamid Safety Award Bronze Plaque was merited by the company's Hamilton, Ohio plant for a record of 402,202 manhours without a disabling injury, extending from May 1, 1948 to November 1, 1953. An Award of Merit goes to the firm's Michigan City, Indiana Plant for its record of 336,905 manhours without injury.

THE aviation division (Battle Creek, Michigan) of the Oliver Corporation has received three separate awards at a mass meeting of its employees and executives at the plant. The principal award, the President's Trophy, was personally presented by A. King McCord, company president. This trophy is awarded annually to the winning plant in Oliver's ten-plant safety and good housekeeping contest. The interplant competition has had a positive effect on accident prevention as evidenced by the company's overall frequency rate of 2.6 and .35 severity rate as compared to national industrial averages of 10.3 and .94 respectively.

The National Safety Council and Marsh and McLennan, Chicago insurance firm, presented additional plaques in recognition of the aviation division's outstanding safety record of working 3,000,000 manhours without a disabling accident between September 20, 1952 and May 7, 1953. The safety record is particularly impressive because it was compiled during a rapidly expanding aircraft tooling, production recruiting and training program. Experienced aircraft personnel were not available in the Battle Creek area and the majority of the division's production and inspection

GET THE FACTS ABOUT—

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THE MOST EFFICIENT SKIN CLEANSER MADE!

A HEAVY DUTY SKIN-CLEANSER without a peer in the industrial field. It has a high anhydrous content and is superfatted for extra mildness. This super mild soap is scientifically blended with an edible corn meal scrubber and a special skin emollient to give thorough, safe cleansing to the dirtiest hands.

COMMODORE—Same formula as "Treet" but extra coarse. Ideal for those who prefer a "rough feeling" soap, yet one that will leave the skin soft and smooth.

An Invitation—We will be glad to send detailed information and prices on these products, and invite you to ask for free sample quantities. No obligation, of course.

LIGHTFOOT BAR SOAPS

PLAIN CUT
Made for industrial use—office washrooms, plant showers, etc.

"24 HOUR" DEODORANT SOAP
A mild toilet soap containing G-11 (Hexachlorophene)

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Contains milk solids and lanolin for extra mildness.

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employees were trained in the company's training school. Over 4,000 individual course completions have been recorded during this time. The safety record evidences the value of safety training among new and relatively inexperienced employees.

Al Krauchunas, now assistant personnel manager, was the division's first Safety Director. The safety program is now headed by Ed Hessmer.

THE North Carolina Motor Carriers Assn., celebrating the 50th Anniversary of trucking, has been presented the American Trucking Association's national truck safety award.

James F. Pinkney of Washington, D. C., general counsel of ATA, presented the award to C. Grier Beam, president of the North Carolina association. Mr. Pinkney complimented the North Carolina group on winning the award for the fourth time in seven years. The association received similar awards in 1946, 1947 and 1951. In pointing out that the "real safety work of the trucking industry takes place at the state level" Mr. Pinkney outlined some of the safety programs underway, including driver training periods, courses such as the 6-week session for truck drivers at North Carolina State College, and self-policing through voluntary but rigid safety rules over and above governmental regulations and laws.

FOR the fourth consecutive year, the title "Safest Woodworking Plant in Ohio" is awarded to The American Box Company, Cleveland, Ohio. Employee cooperation with the company's many safety rules and devices were credited for the 4-year record of no lost time due to accidents. Protective guard rails and housings around exposed machinery, and strict adherence to safety-designed operational procedures were important factors. The company maintains a First-Aid Dispensary on the premises for quick treatment of minor injuries.

INDUSTRIAL Cleveland's top manufacturing safety award for 1953 has been presented to Jack & Heintz, Inc. The annual award, sponsored jointly by the Industrial Commission of Ohio and the Greater Cleveland Safety Council, is presented to that manufacturing concern which established the best continuous production record without accident in a 6-month period beginning April 1 and ending September 30. Jack & Heintz led the field of more than 330 manufacturing firms considered in the competition with a record of 3,477,573 continuous man-hours without a "lost-time" mishap. Since the close of the 1953 contest, the 3000 employees have already dwarfed their award-winning performance. At last count, they had compiled over 5,000,000 continuous man-hours without a "lost-time" accident.

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Dupor No. 24

The Respirator that is U.S.B. of M. Approved for Type A Dusts

More than 24 sq. in. twin filter area. Sanitary face cloth. Soft rubber face mask. Has all patented DUPOR features including bulb valve-controlled breathing—panorama view with no blind spots. A favorite for years!

Sample sent $3.00 pp

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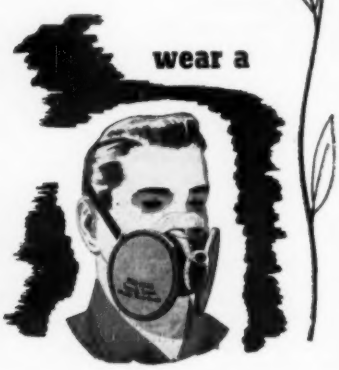

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Sample sent $3.25 pp

For the best in eye protection get H. S. Cover's Gas-Tight, Fog-Proof Goggles.. $2.00 pp

H. S. COVER, South Bend, Ind.

(For further details, use Key # O-30 on free Inquiry Card on page 75)

Learning . . . . . the hard way

HOW TO BUILD YOUR OWN GALLOWS . . .

A YOUNG girl—weaver, in charge of 4 looms, went to the back of one of them carrying a piece of cardboard which she used to waft away fluff that collected beneath the loom. Inside the machine, running the width of it, was an unguarded crankshaft. A few minutes later the girl was found dead, lying over the crankshaft with her neck scarf wound tightly around the shaft. She had been strangled when her scarf caught on it.

Her employers were prosecuted and pleaded guilty to leaving the crankshaft unguarded. They gave, as extenuating circumstances, that there was nothing to suggest that even if a guard had been provided the accident would not have occurred. Contrary to instructions, the girl had been cleaning machinery while it was in motion and, assuming that a guard had been provided, would have taken it off and carried on with the loom still running. Time was allowed for cleaning the loom while all the machinery was stopped. All operators were given training in safety precautions while running the looms; and the dead girl, employed for 6 years by the company, should certainly have known the safety rules. The firm was however fined because of inadequate supervision.

This girl built her own gallows. She wore loose clothing around moving machinery, disobeyed safety regulations and attempted to clean machinery while it was in motion. Either she was stubbornly careless, or supervision failed seriously in impressing the dangers of her occupation on her.

IF IT'S HOT . . . VENTILATE IT!

JUST as fire needs air to burn so heat needs air to dissipate. Many fires have been started for simple lack of ventilation to take away the hot air and other gases that build up around hot areas. You don't have to go down to the boiler room or take a course in fire control to observe this either . . . all you have to do is to sit on a windy hill on a hot day. The sun is just as hot as in the valley, but the breeze carries off the heat so quickly that you feel cool and refreshed.

In this instance an oil burning furnace was installed on an asbestos pad about 1½ inches thick, on top of a 4-inch concrete slab placed on the wood floor. No provision was made for ventilation under the furnace. When the furnace had been in operation only a short while fire started in the wooden floor. Only prompt discovery prevented serious loss. This illustrates the importance of providing adequate ventilation around stoves and furnaces when they are near combustibles. Asbestos board cannot be depended on to prevent fires when there is no natural air circulation around it.

PANIC . . . ACCIDENT'S HELPER!

ACCIDENTS have been traced to the human factor so many times it is almost vain to point it out again. However, as we learn more about how men operate, as we have learned about how machines operate, the human factor must come more and more under control. As it is, the human factor not only causes accidents, but also makes them more serious.

Carelessness might be called the original cause of this accident. Panic almost trebled its seriousness. An employee was using alcohol to clean some material when he spilled it on a hot plate. The alcohol promptly blazed up and set fire to the man's clothes. Frightened, the man threw the alcohol container away. It struck a wooden partition that burst into flames. Panic-stricken, the man started to run. He ran straight into the arms of another employee whose clothing also caught fire. Both men were hospitalized when the fire was put out.

Training

The best thing to do to prevent this situation is to train employees to be prepared and know what to do. The man could have put out the fire by smothering it on the floor or with a heavy material . . . running was the worst thing he could have done. If he had been trained to meet the emergency, he would have reacted more calmly. Panic is accident's best pal!

FASTER

MORE EFFECTIVE... MORE DEPENDABLE

FIRE-STOPPING POWER

MODEL 20-B

ANSUL
Chemical Company
FIRE EQUIPMENT DIVISION · MARINETTE, WISCONSIN

ANSUL

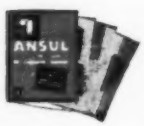
FIRE EXTINGUISHING EQUIPMENT

FASTER . . . A short, quick downward motion of the puncture lever pressurizes the extinguisher and it is ready for instant use.

MORE EFFECTIVE . . . Even the inexperienced operator gets near-expert results because of the ease of operation and handling. In addition ANSUL *"PLUS-FIFTY"* Dry Chemical has greater fire-killing power.

MORE DEPENDABLE . . . Exclusive ANSUL-ENGINEERED design features include water-tight and corrosion-resistant construction, easy, on-the-spot recharge without special tools and other exclusive Ansul developments which insure greater dependability.

FIRE-STOPPING POWER . . . ANSUL FIRE EXTINGUISHERS have the highest ratings for fire-stopping power ever awarded any type of class B and C fire extinguishing equipment.



Send for File No. B-212. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

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MANUFACTURERS OF
DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT, REFRIGERATION PRODUCTS, INDUSTRIAL AND FINE CHEMICALS AND LIQUEFIED GASES

(For further details, use Key # G-21 on free Inquiry Card on page 75)

Flameproofing Compound Passes Fire & Wash Tests

Recommended for Hotel and Industrial Uses

THE York Research Corporation of Connecticut, one of the nation's foremost testing laboratories, has approved durable flameproofing compounds for cotton fabrics for hotel and industrial use.

A series of exhaustive tests run on bed tickings and work clothing fabrics treated with a flameproofing process were disclosed in a report from Warren C. Hyer, vice president of York Research. The report states that the fabrics withstood direct flame tests without igniting and that repeated washings failed to destroy the fire-retardant properties of the finish. Tests for char and afterglow also showed that these factors stayed well within prescribed limits.

The process has been applied to safety clothing for use in steel mills for several years with excellent results, but this is the first time a testing laboratory had approved adoption of a durable or "permanent" finish for bed tickings, one of the major sources of hotel fires.

According to the York report, the tests for flame resistance were based on ASTM Tentative Specifications D-626-41T, which provides that adequately flameproofed materials shall not continue flaming for more than 2 seconds after the igniting flame is removed, that the average length of char shall not exceed 3½ inches, nor the maximum 4½ inches, and that the afterglow shall not continue to consume material past the char length or be of excessive duration. In all cases, Hyer reported, the results not only met but exceeded specification requirements.

The washing tests, based upon ASTM Commercial Laundering Test D-435-42, involved 10 harsh launderings of 45 minutes duration each at a temperature of 160 degrees, Fahrenheit. Soap and soda ash were used in each solution, and the sample fabric was then ironed at 275–300 degrees. Results of testing for breaking and tear strength also were pronounced satisfactory.

The name of the manufacturer of the flameproofing compound may be obtained upon inquiry to the Editor.

National Electrical Code Revised In New Edition

THE National Electrical Code, affecting electrical safety in every U. S. community, has been published in its latest revision. The new edition, published and sponsored by the National Fire Protection Association, supersedes all previous editions, the latest of which was issued in 1951.

The most widely used safety standard of its kind, the code forms the basis for safe electrical appliances and electrical installations in buildings. The 1953 edition has been adopted as an American Standard by the American Standards Association.

In its revised form, the new code is the result of a broad sampling of opinion and experience by home owners, industry, inspection authorities, fire officials, governmental agencies, insurance groups and cooperating national associations. Representatives of these groups—over 130 individuals—have been working for the past 12 years on the changes which have been incorporated in the 1953 edition. The revisions were double checked by general distribution to the electrical industry and related fields.

Some of the significant changes and additions contained in the new code are:

Electrical receptacles will henceforth be required to be designed so that they cannot be used interchangeably in different circuits of different voltage, frequency or types of current (AC or DC).

New rules have been inserted to safeguard users of portable equipment and electric clothes driers by more effective grounding means.

Liberalization of the use of armored cable in the air voids of cinder block walls is authorized except where subject to excessive moisture or dampness.

An entirely new article is submitted on mineral insulated-metal sheathed cable permitting its use for services, feeders and branch circuits in both exposed and concealed work, in dry or wet locations, under plaster or imbedded in plaster, brick or other masonry. Necessary changes in the balance of the code to incorporate this type cable are also detailed.

A revised set of markings for flexible cords and fixture wire is authorized in the '53 code to eliminate obsolete and include new types, affecting particularly heat-resistant, rubber-covered fixture wire, latex-rubber insulated wires, tinsel cords, heater cords, and range cables.

Provisions are inserted in the code

designed to prevent the installation of fixtures and outlet boxes in contact with conducting surfaces of conductive thermal insulation.

Gas piping has been deleted as a method of grounding electrical circuits.

The NFPA code-making panel dealing with electrical appliances has made it mandatory that flatirons be equipped with temperature limiting devices, which action will undoubtedly go far to eliminate fires caused by accidental overheating of such appliances, responsible for many fires in years gone by. Most manufacturers have already incorporated this safeguard on irons. Temperature limiting means are also recommended for water heaters.

A special subcommittee developed a new section on fixed electrical space heating equipment in recognition of the growing use of such means of home heating.

Another appliance receiving attention is the refrigerator motor which the 1953 code requires to have adequate ventilation to prevent overheating.

Significant changes are proposed for the section of the code dealing with "hazardous locations." Recognition has been given to positive-pressure ventilation arrangements to reduce the area considered hazardous when such ventilation is safeguarded by effective means. Definitions of hazardous atmospheres are more closely delineated to aid in applying the rules. In order to avoid undue restrictions on certain equipment in "Class I, Division 2" locations such as fixed lighting, instruments and resistors, there is a proposal that where temperature limitation, based on 80 percent of the ignition temperature of the flammable gas or vapor involved could be secured, general purpose type instead of Class I equipment might be used. Specific temperature limitations are suggested for surface temperatures of electrical equipment in atmospheres involving Class II or III locations, that is atmospheres laden with combustible dusts, fibers or flyings.

Perhaps the most sweeping changes of all are a complete new set of rules proposed for commercial garages, residential garages, aircraft hangars, gasoline service stations, bulk plants storing flammable liquids, paint, lacquer and similar finishing process areas, and where combustible anesthetics are used.

Other complete revisions affect motion picture studios and elevators. The latter article also is broadened to take care of dumbwaiters and moving stairways (escalators).

Emergency lighting systems, as are generally required for hotels, theaters, sports arenas, hospitals and similar institutions, also receive a complete new treatment. Requirements for emergency power, as needed for essential refrigeration, breathing apparatus, power for hospital operating rooms, fire pumps and industrial processes where current interruption would have serious consequences, are added to the previous rules which covered only lighting. The new code proposals feature how emergency systems should be installed leaving to other NFPA standards, specifications as to where and when such systems are needed. The NFPA Building Exit Code is the principal standard defining the latter requirements.

There is also a general revision of rules applying to circuits and equipment operating at more than 600 volts between conductors. This particular article in the 1951 code needed clarification to indicate clearly its intent. The new article is broadened to include low voltage power circuits not used for signal or remote control circuits to which previously this article was restricted.

The article on radio equipment now clearly indicates its application to television as well and important revisions are made to more specifically help installers on the installation of antennas and to detail methods of grounding.

Copies of the new editions of the code are available by addressing NFPA Publications Services, 60 Batterymarch Street, Boston 10, Mass. The cost is $3.00 per copy for the cloth-bound edition which also contains 128 pages of excerpts from the significant electrical provisions of 62 other NFPA standards. The paper-bound edition is available for $1.00 each, discounts for quantities over 25, but it does not include the excerpts from other NFPA standards.

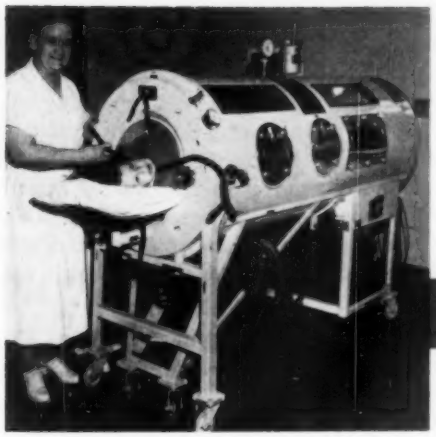
LP Gas Hazards

GROWING popularity of liquefied petroleum gas as an all-purpose fuel, exemplified by its increasing use as a motor fuel, has prompted the safety engineers of the Association of Casualty and Surety Companies accident prevention department to publish a new pamphlet, "LP Gas—Safe Handling and Use," to inform the public, vendors, industrial plants and motorists, how its inherent hazards can be safely controlled.

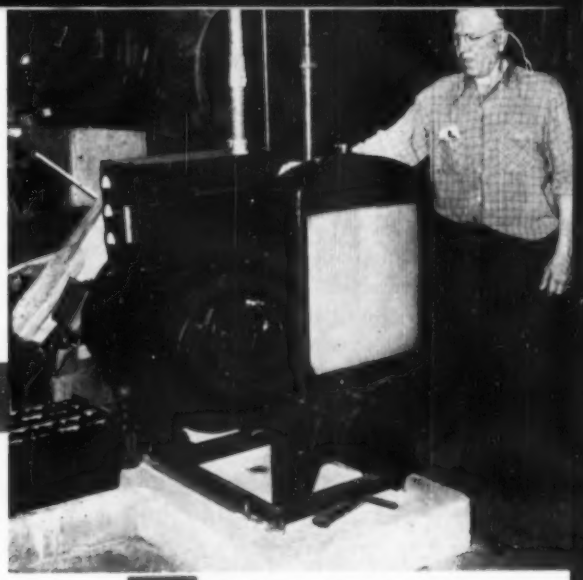
Many deaths and personal injuries and property damage totaling millions of dollars have resulted in fires and explosions of LP gas in past years. The pamphlet, developed in cooperation with the LP Gas Association, covers all the known safety problems on the basis of 20 years' experience. According to a recent study, 165 persons were killed and 594 injured in 129 LP gas explosions and fires during the last two decades because the properties of the fuel were not understood and safe practices necessary in its handling and storage were not followed.

The new 60-page pamphlet combines all the information of the organization's previous pamphlets on LP gas and adds new material. It describes the composition, properties and behavior of the gas and also gives detailed information on its storage and handling at domestic, industrial, utility and bulk distribution stations. It likewise covers the transportation and distribution of LP gas from producer to consumer and its use as a vehicle fuel.

Copies may be obtained from any of the Association's member companies, or may be obtained at cost from the Association itself at 60 John Street, New York 38, N. Y. They are priced at 25 cents for a single copy, or $20 for 100 copies.



Power failure will not affect this iron lung.



Emergency Power Generator

GUARD ESSENTIAL SERVICES AGAINST POWER FAILURE

MUNICIPAL services are the natural concern of responsible citizens in any town or city. Taxes to maintain these services—police, fire and water, among others—are at an all time high in most communities. Consequently, people like to feel that they are getting their money's worth.

In Erie, Pennsylvania, this protection is not only highly satisfactory, but the citizens have the assurance that the smooth functioning of these services will not be interrupted by breakdowns.

The heart of any widespread organization is its communication system. Knock it out and you have effectively crippled the service. In Erie, all power supplies to essential services are equipped with stand-by electric power which goes into action immediately, if for any reason central power should fail.

The Erie police radio, for instance, has a stand-by electric plant on duty in the central station and another at its transmitter several miles away. The fire department's far-flung alarm system, which is centralized in a downtown control board, is also safe-guarded against power failure by an electric plant.

At City Hospital in Erie an electric plant is on duty to provide power for iron lungs should the necessity arise. Other hospital services are likewise provided for by the plant. Erie businessmen too have found good use for stand-by power. A florist shop, theatre, hatchery and hotel are examples of private enterprises so equipped. Ample equipment to guard against power failure for essential municipal services is becoming a must in many cities.

Pictures by courtesy of Kohler Company.

Stand-by electric plant guards police teletype.

Panel of fire call boxes has emergency power.

Sodium Nitrate Storage

THE periodic occurrence of large loss fires involving buildings used for the handling and storage of sodium nitrate indicates a need to review this material, according to a bulletin of the National Board of Fire Underwriters. The fires have caused serious injuries and loss of life as well as heavy property damage. They have been characterized by combustible building construction, large fire areas, combustible storage containers, rapid spread of flame, intense heat and explosions.

In March, 1952 at Savannah, Georgia a fire of unknown origin destroyed a combustible warehouse containing 6,000 tons of sodium nitrate. The fire spread so rapidly that sections of the building collapsed before firemen arrived. Property damage amounted to approximately 560,000 dollars.

In March, 1953 at Wilmington, North Carolina a fire destroyed a large port terminal property containing 25,000 tons of sodium nitrate. The construction was of brick and wood and the area involved in the fire covered 160,000 sq. ft. Total property damage was estimated at 5,600,000 dollars. Several warehouses of combustible construction had been provided with automatic sprinkler protection which proved to be inadequate for sodium nitrate storage occupancy. In one instance, sections of the sprinkler piping were entirely consumed when they dropped into the molten sodium nitrate. In spite of this discouraging record, there is good reason to believe that this material can be handled and stored safely and efficiently under proper conditions.

Sodium nitrate has been used as a plant food since 1831 and is used both in fertilizer mixtures and by direct application to the soil. It is shipped in bulk, in moisture-proof bags and in wooden barrels. The common practice of bagging the material in the warehouse introduces the hazards inherent in the use of electrically-powered equipment and in the storage of large quantities of combustible bags and other containers. It is desirable that the bagging process be conducted in a segregated location outside the main storage area, and that the storage of empty bags be confined to noncombustible buildings separated from the warehouse.

How $NaNO_3$ Behaves

Sodium nitrate does not burn, but it begins to melt at a temperature of approximately 586°F. Continued application of heat causes it to evolve oxygen and decompose. When in contact with burning organic material, this additional oxygen increases the intensity and rate of flame spread. For this reason the compound is classed as an oxidizing material and is used in the manufacture of certain explosives. The heat of the flowing molten salt is capable of igniting combustible materials as it comes in contact with them. Additional information on the subject of molten salts can be found in N.B.F.U. Research Report No. 2, "Potential Hazards in Molten Salt Baths."

Explosions which have reportedly occurred during fires in storage facilities are believed to have resulted from the application of water to the molten sodium nitrate. Intense heat expands the water into steam with explosive violence and often creates steam pockets below the molten surface. The bursting of these pockets provides forces which can scatter both fire and molten material.

A first step in the safe storage of sodium nitrate in bulk is the use of noncombustible bins. For long periods of storage, combustible bags and barrels should be emptied and either washed or destroyed. These containers can become heavily impregnated with the sodium nitrate, particularly in damp locations. In this condition they will burn violently when ignited.

A second safety measure is the use of noncombustible materials when replacing or repairing storage build-

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ings. Handling sodium nitrate is a dusty operation and wooden floors, walls and beams are soon saturated with the dust. The hygroscopic nature of the nitrate salt causes the wood to become chemically impregnated. In time the wood grains split open, easily ignited splinters curl up to serve as "fusees" and the building becomes highly susceptible to fire spread.

Where large fire areas cannot be subdivided by fire-resistive walls, noncombustible draft curtains are a useful aid in controlling the spread of fire. The draft curtain serves to block the rapid spread of heat and flame and to aid in the quick and efficient action of automatic sprinklers in the area directly involved in the fire. The extensive use of conveyor systems in handling sodium nitrate makes protection of openings in walls and partitions difficult. The location of the tramway and beltway openings near the roof line permits the spread of heat and smoke, and prevents the closing of non-automatic fire doors by plant personnel. Because of this inherent difficulty, the amount of combustible construction material used in the buildings and bins must be held to a minimum.

Ignition Sources

Electricity has been a common source of ignition in these warehouse fires. All electrical wiring and equipment should conform to the recommendations of the National Electrical Code (N.B.F.U. Pamphlet No. 70) for Class II locations. The increasing use of diesel-powered and gasoline-powered portable equipment requires careful maintenance to prevent the leakage of hydraulic oils and raw fuel.

A definite good housekeeping program will greatly reduce the hazard of sodium nitrate storage. This program should particularly emphasize prompt disposal of combustible containers by washing or burning in a safe location, removal of trash and elimination of heavy dust accumulations.

Fires involving sodium nitrate can be safely fought with water *in the earlier stages*. Because of the peculiar nature of the nitrate dust, it is necessary that fire hose in dusty locations be inspected for deterioration at frequent intervals. Smothering-type extinguishing agents are of little value because the heated nitrate will supply sufficient oxygen to whatever material is burning. If the fire has gained considerable headway and the sodium nitrate is melted or fused, extreme care should be used in the application of water. Direct application of hose streams has resulted in violent eruptions, with greatly increased spread of fire and explosions.

Because discovery of the fire in its early stages is so important, the need for carefully supervised watch service or automatic fire detection equipment is especially urgent. Immediate and reliable contact with public fire-fighting services and unobstructed access are necessary.

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Fire Safety Guide For Nursing Homes

AS THE result of urgent requests for fire-safety recommendations for nursing homes and similar institutions, the National Fire Protection Association has issued a guide to fire safety in this type of occupancy. These recommendations, based on the Building Exits Code, are presented only as an informative guide for interim use, pending the release of an official standard by the NFPA committee on Safety to Life.

The fire safety recommendations follow:

1. THE BUILDING—As in any type of use, a building designed specifically for this type of occupancy is much better and safer than some former dwelling converted to nursing home use. The fact that the old building has stood for many years is no guarantee that it will not burn. One-story fire-resistive construction is best, but any height buildings of fire-resistive construction are considered safe if all stairways and other vertical openings are enclosed and other standard safeguards provided. Combustible buildings are inherently unsafe for use above the street floor for bedridden patients, or patients who, by reason of mental condition, could not be expected to help themselves in case of fire. *Brick or stone outside walls do not make a building fire-safe if the interior construction is wood.*

The hazard of large-area buildings can be reduced by fire walls or smoke-stop partitions. Open stairways, elevator shafts, laundry chutes, and dumbwaiters may act as flues to spread smoke and fire through the building. Smoke alone may be fatal. It is not necessary to build brick walls around stairways to make them safe; in an existing building a light enclosure of wired glass and metal with self-closing wired glass panel doors is quite adequate. Any type of enclosure, with doors kept shut, is better than none. No such problem exists in a one-story building without basement, or having access to the basement only from outside.

Plaster (or plasterboard) walls and ceilings will not burn. Ordinary wallpaper does not add to the hazard unless several successive layers are applied. The amount of wood in doors, windows and frames is not ordinarily enough to create any serious hazard. Combustible fibreboard and ordinary plywood, however, are subject to rapid flame spread, often much faster than ordinary wood. Experience in recent nursing home fires shows that where such materials are used for interior finish, flame spread is so rapid that there is not enough time to rescue patients. In existing buildings this hazard may be reduced by coating with flameproofing paint. Use only an approved product, applied fully in accordance with directions. Paint only protects the surface—there still may be combustible concealed

spaces behind. It is also well to apply flameproofing paint to any large expanse of wood-paneled wall. Wood floors are not important.

Automatic sprinklers, installed to protect the entire building, largely offset most of the structural hazards listed above. Most existing buildings of unsafe combustible construction can be occupied with reasonable safety if protected with a standard automatic sprinkler system. A sprinkler installation costs money, but pays big dividends in fire safety. There may also be incidental savings in insurance. Sprinklers apply water directly on the fire and provide an alarm.

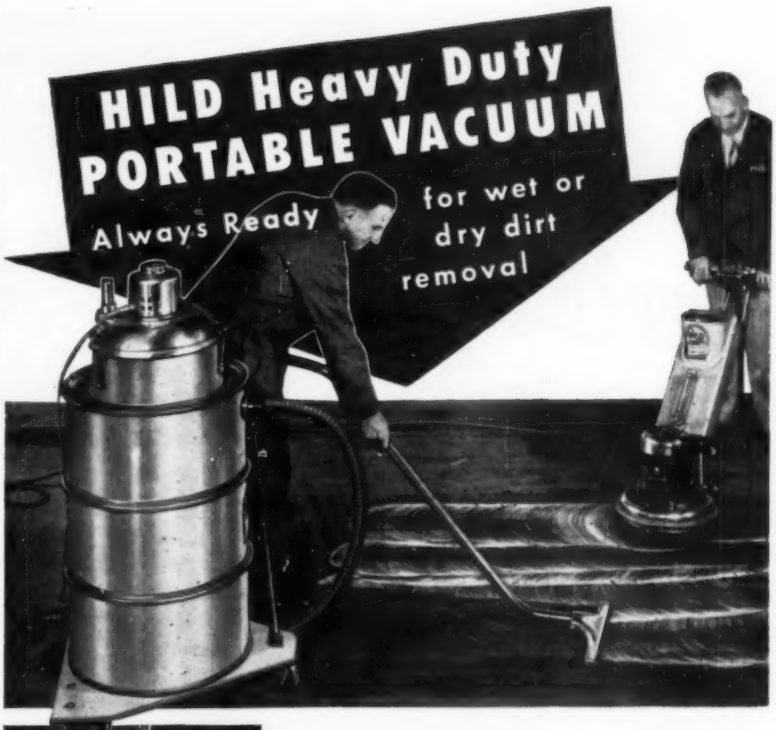
2. GETTING THE PATIENTS OUT—No matter how well constructed and protected the building, there is always a possibility that it may be necessary to get the patients out in case of fire. A single burning mattress, for example, may create enough smoke to force the evacuation of the entire building. Where the entire construction is combustible, the need for speed in evacuation of patients is naturally greater. Even the best of exit facilities may not be adequate without some prearranged plan for their use.

Adequate personnel on duty at all times is the first requisite for effective handling of any emergency. If there is at least one nurse or qualified attendant awake and on duty at all times, fire can be detected in its incipiency, help called, and an immediate start made on moving patients to a place of safety. A larger number of attendants on duty is obviously necessary where the number of patients is large, or where the property is so arranged that a single attendant cannot have immediate supervision over the entire area.

Exits, arranged at various points remote from each other, provide facilities for safe escape, no matter where a fire starts. The Building Exits Code requires that there shall always be at least 2 exits as remote from each other as practicable. Exit doors swinging out are not subject to blocking by pressure from the inside. Doors of ample width make it possible to move bedridden patients in their beds, assuming the hospital type bed with casters is used and that exits lead out on the level rather than down stairs.

Exit locks and fastenings have been responsible for many deaths in fires. The so-called "panic bar" is the best type of latch; simple pressure from the inside against the bar opens the door. In cases where care of patients requires keeping doors locked, it is doubly important that attendants be on duty to unlock doors immediately in time of emergency. There are systems available whereby locked doors can be released instantly by operating an electrical switch in a central location.

Lighting and adequate marking of exits are important to their effective use. Fires frequently affect electrical wiring systems and leave the building in darkness, greatly handicapping rescue efforts. An emer-



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gency lighting system in accordance with the National Electrical Code is the best answer to this problem. Electric battery lights, flashlights, or kerosene lanterns, however, may be used in case of emergency. Exit drills are highly desirable in nursing homes just as they are in schools and other institutions. With "fire drills" held at intervals, the patients become accustomed to the procedure. In such drills it is not always necessary or desirable to move bedridden patients; alerting personnel and having everything ready may be sufficient.

3. CONTROL OF FIRE HAZARDS—For safety in nursing homes, it is necessary to give careful attention to all common fire hazards just as in any other type of occupancy. Heating and cooking equipment of a standard, safe type is a first essential. Avoid any portable heater subject to overturning or contact with combustible material. Any fuel burning heater not connected to a standard chimney or flue may be dangerous. The National Electrical Code is the proper criterion to follow in electric wiring. An installation in accordance with the Code, properly maintained, and always using standard fuses of the right rating, will reduce electrical hazards to the minimum.

Smoking is an ever-present hazard. The practical answer here is supervision and the provision of ample, safe ash receptacles. Good housekeeping and immediate removal of rubbish and other unnecessary combustible material from basements, attics and other out-of-the-way spaces as well as from living areas will do much to reduce the amount of fuel on which fire may feed.

4. ALARM AND EXTINGUISHING EQUIPMENT—It is always prudent to have equipment ready to deal with any fire which may occur despite all prevention precautions. An automatic fire alarm system to give immediate warning in case fire starts anywhere in the building is highly desirable. Such a system has greatest effectiveness only where it is of a reliable, standard type installed to cover the entire building including basements, attics, closets and other out-of-the-way places where fire might start undetected. NFPA Standard No. 74 outlines the essential principles of home fire alarm systems.

Calling the nearest fire department is the first thing to do in case of any fire, no matter if it seems trivial. The fire department would rather respond needlessly many times than take the chance of losing lives because it was called too late.

5. INSPECTION—The best fire safety plans are apt to become ineffective through neglect if there is no regular procedure for checking plans and equipment. This can best be accomplished through a periodic inspection by some outside agency such as a fire department inspector or fire marshal who can review the property from an expert point of view. The outside inspector may note hazards which involve details so familiar to management that they pass unnoticed.

TRANSPORTATION SAFETY

What We Should Know About Drivers...

By DR. LEON BRODY
Director of Research & Publications
Center for Safety Education
New York University, New York City

PART II

The "Average" Driver

Let it not be inferred from all this talk about accident repeaters and chronic violators that primarily only a small percentage of abnormal drivers must be controlled. True, some people do have more than their proportionate random share of accidents. But it is just as true that the great majority of accidents happen to "average" drivers. Accident proneness as such probably does exist, and more often than not may be associated with evidences of long-term maladjustment.

However, under certain circumstances, anyone, not just a few people who require psychiatric treatment, can become accident prone—for the mechanisms which operate in major and minor psychoses are also operative in everyday adjustments or behavior.

Thus, in a sense, everyone is potentially accident prone and, under certain stresses, actually accident prone, at least temporarily. Such temporary accident proneness explains why drivers with years of accident-free experience may suddenly become involved in an accident or series of accidents for which they are entirely or partly responsible. This temporary accident proneness may last a week, a month, or a year. It may result in one, two, or three accidents—or none at all, because the situations encountered do not present the other elements for an accident, elements like a suddenly approaching vehicle, or slippery terrain, or a pedestrian darting into the path of the driver's vehicle. If these elements present themselves, accidents will result.

A brief comment regarding the causes of accidents commonly listed in statistics and reports—it is possible to state unequivocally that items listed such as inattention, carelessness, following another vehicle too closely, and speeding are, for the most part, merely symptoms of various basic, underlying conditions. Whatever is wrong with the driver, psychologically, may manifest itself in a number of accident-producing ways, of which excess speed, or even insufficient speed, is only one possibility.

Now, while there is a commonly disturbed, anti-social nature to the accident-repeater group, the converse is also probably true: good drivers are good citizens. For purposes of illustration, take a report recently issued by the safety director of one of the country's large fleets announcing the results of a safe driver award program. He indicated that 100 of the company's 521 line-haul truck drivers had driven more than 56 million miles without a preventable accident. Company records show that these 100 men, as good citizens of the highway, helped at least 337 motorists in distress during the past 4 years. One driver has 19 cards and letters on record that were sent in by thankful motorists. Good driver, good citizen.

Personality Traits and Physical Factors

Current research highlights the importance of personality traits in safe driving; there is a definite and justified swing from consideration of such things as reaction time and other so-called psychophysical factors to broad personality considerations. Management wants to apply this knowledge to its operations right now. Unfortunately, this phase of the science of human behavior is still very young. The general importance of personality is known but it cannot be said with assurance: use this or that test in screening new drivers.

Of course, specific illnesses or physical disorders can, per se, with little apparent relation to personality disturbances lead to accidents. In fact, there are many more such illnesses and disorders than is commonly realized. Epilepsy and heart conditions, it is well known, can cause momentary lapse of consciousness; but, how commonly is it realized that individuals with allergies who are using anti-histamine drugs may temporary develop dizziness, or difficulty in focusing their eyes? The neurologic effects of the barbiturates and other sedatives used by individuals for a variety of reasons—effects that include tremor, weakness, and in-co-ordination—are not fully recognized. The average person indeed is unlikely to be aware of unusual conditions such as carotid sinus syncope, a condition where the individual momentarily loses consciousness whenever he twists his neck in a certain way, as in backing a car out of a garage.

Incidentally, the Interstate Commerce Commission's new regulations provide for periodic medical examination of drivers on and after January 1, 1954. The driver must be re-examined at least once in every 36 months and certified by a licensed physician as meeting satisfactorily the I.C.C.'s requirements for drivers. This is an important step

in the right direction, as is also the I.C.C. provision that employers may require additional and more stringent physical, mental, or other qualifications, and may require stiffer and more frequent physical or mental examinations than those officially prescribed.

Suggested Standards and Programs

A request for specific safety standards of guidance based on what is known about commercial vehicle drivers raises four basic questions:

Are your drivers—or your prospective drivers—physically well?

Are they mentally well?

Are they satisfied or likely to be satisfied with their type of job?

Are they proficient in the skills of commercial vehicle operations?

There are a variety of activities that add up to insurance for "yes" answers to all these questions. These suggestions include:

1. Carefully conducted **pre-employment interviews** by a competent personnel department, with due regard for all 4 basic questions. Detailed employment application forms should be used and the interviewer should make sure that all requested information is supplied. A survey of the files of 60 fleets shows many omissions of important facts in the personal or employment history of their applicants; in half of the cases their previous driving record had not been checked, yet many had unfavorable histories. A planned, exploratory, friendly interview based on a good application form is all-important.

2. A comprehensive **pre-employment medical examination** by a competent medical department. Physicians should be encouraged to record answers to all questions. Up to 20 percent omissions have been noted in company medical files. The medical examination should include a record of sprains, bruises, fractures, and other data indicative of accident proneness. These examinations should be repeated at least every 3 years. In many instances, repeat physical examinations have not been given for 10 or even 15 years.

3. An unhurried **orientation program** for the men that are hired. Get the new man started right. Make him feel at home. Spell out his job for him. Show him how he belongs. This is essential for early job satisfaction. It should help reduce the high labor turnover and relatively high frequency of accidents characteristic of the first 6 months of employment in practically every major industry.

4. Careful **pre-service training,** on and off the vehicle, to the extent warranted by the level of experience set as a minimum requirement for employment. An important part of this training, is to get new men to recognize the conditions that may make them temporarily accident prone. Drive home the significance of these conditions.

5. Intelligent supervision is made possible by adequate management training programs, including training not only in operations but also in human relations. Remember: good human relations is an antidote for anti-social behavior.

6. "Operation precaution." Train the supervisory force to spot accident-disposing conditions among their men and, if medical and personnel staff support their observation, ground the drivers concerned, and follow up as required.

7. A good program of **industrial relations** provides for employee benefits, incentives, suggestion systems, safety committees, and other measures of demonstrated value, including guidance and counseling services to correct or control conditions that lead to temporary accident proneness.

8. Co-operation by organized labor. Employers are not the sole beneficiaries of decreased accidents. Union participation should be helpful in bringing hazards to the attention of management, as well as in conveying to its membership the importance of and means to employee safety.

9. Special training programs that cover new operations and new equipment—and remedial programs to correct faults that have developed despite precautions. Observe men from time to time and analyze their driving errors. Emphasize data obtained from studies of near-accidents, a valuable source of information. This might well be done in pre-service training also.

10. "Operation gadgets" can cover a variety of things. Here is one that may have special value: Many companies now recognize the value of a recreation room for their employees. If facilities permit, install some punching bags or sandbags. Employees probably will appreciate this gesture by management. This can do more than contribute to good employee relations. If impulsiveness, aggressiveness, and anxiety are among the more common, basic characteristics of unsafe driving, a 10- or 15-minute workout on the sandbag or punching bag prior to a trip can release some of the tension or unhealthy energy which might otherwise be expressed behind the wheel of the truck.

11. Periodic individual inventories: Provide for medical re-examination and personal re-interview periodically.

Since 1934 there has been a 63 percent decrease in motor truck accidents per 100,000 vehicle miles driven. The sharpest decline has occurred since 1947. It is more than coincidence that during this same period, commercial fleet managements have been developing and extending their programs of selection, training, and good management. If it were possible to take similar steps in the licensing and improvement of the general driving public, there would be a large dent in accident statistics. Perhaps it is possible. Out of this basic research on commercial and non-commercial drivers, out of the trucking industry's programs for safer and more efficient operation, may yet come standards and guides that can be effectively applied for nationwide traffic safety.

The first part of this article appeared in the January, 1954 issue.

"Sawtooth Piers" Bite Into Loading Problems

Saw-tooth loading piers on warehouse above ease trailer truck congestion delays caused by narrow 56-foot road way, in which drivers have to operate.

Loaded trailer truck (at right center) pulls away from angular loading pier. Before new pier installation, when trucks had to park flush with warehouse wall, the departing truck would have had to wait until truck at its left, still loading, was ready to leave. Now the trucks can still be loaded easily; but, parked at an angle, they have room to get out when loaded.

"SAW TOOTH" loading piers have eased trailer truck maneuvering, and soothed drivers' tempers as well, at the New Haven, Connecticut Winchester plant warehouse of Olin Industries, Inc. At the same time the new loading piers have nearly doubled loading capacity.

The piers get their name from their angular contruction, jutting out 6 feet at the farthest point from the warehouse loading doors. The piers are designed to cure the primary causes of previous truck drivers' woes at Winchester——a comparatively narrow throughway, 56 feet from building to building, and the proximity of the loading doors to one another.

Delays are Costly

Costly departure delays of loaded trucks had resulted when all trucks had to park flush with the loading doors of the warehouse. When so parked, any truck to the left of another "stymied" the latter's exit, until the truck at the left moved. Now the "saw tooth" piers permit any angular-parked vehicle to pull away as soon as it is loaded, no matter what its position in the loading.

The necessity of maintaining a clear access lane for warehouse loading trucks to enter a trailer determined the size of the new piers. Any sharper angle, Olin engineers said, would make the trailer too difficult of access for loading. At the time the piers were constructed, the pavement grade was also lowered and carefully evened. The resulting 4-foot pier height now accommodates practically all trailers. Electrical heating units in each pier keep the loading platform free of ice and snow and make possible easy winter loading.

Pictures by courtesy of Olin Industries, Inc.

Tips on Winter Driving

WINTER, with its driving hazards of ice, snow, cold, limited visibility, etc., should be warning enough to motorists to drive carefully. An added help to self-driving are the safety tips of America's truck drivers.

The men who drive the trucks and truck trailers in this country are trained in this highly specialized work. J. T. Outlaw, North Carolina State Chairman of the Independent Advisory Committee to the Trucking Industry, Inc., offers some of the experienced truck drivers' tips on how to drive safely:

1. SAFETY: Truck drivers know that you can't be a safe driver without safe equipment. Improper maintenance is responsible for most car failure. Truck line operators devote a great deal of time to maintenance. Yet, truck drivers check their vehicles frequently for these principal things: Properly aimed headlights. Good, sound tires with deep treads. Windshield wipers and horns that work. Balanced and effective four wheel brakes. Wheels aligned and steering gear tight and well lubricated. Glass and mirrors clear and unobstructed. Tail and stop lights that work.

2. SPEED: Truck drivers are professional drivers. They know from long experience that safe speed means driving slowly enough so that you have control of your car, no matter what turns up. Safe speed means going slow on curves and at intersections, on sand, gravel, wet or icy roads, or when you're too close behind another car. It means slow enough to stop in headlight range at night, slow enough to watch out for playing kids, slow enough to protect yourself against the erratic, unpredictable driver.

3. CONDITION: The man who drives a truck knows that his own mental and physical condition is as important as the condition of his vehicle. He would say: Put business, family and personal worries out of your mind when you get behind the wheel. When you're drowsy, pull off the road and relax. Never fight sleep at the wheel—surrender to it, if need be, off the road. Be on special guard when fatigued. When you are physically tired, all of your senses are off guard.

4. ALERTNESS: One reason truck drivers have so few accidents is that they drive defensively rather than offensively. They always assume that the other driver might be about to do something wrong. Their motto is: Keep an eye constantly open for the unexpected. Driving is a full-time job requiring 100% concentration.

5. COURTESY: Truck drivers have learned from long experience that courtesy and patience go a long way. They're used to stopping short to avoid colliding with the fellow who rides through "on the yellow," letting reckless passers cut back into the line ahead, watching out for the driver who pulls out of a parking space without signaling.

6. PASSING: Truck drivers know that passing on the wrong side is one of the road's commonest and deadliest errors. One of their elementary rules is to pass only when they can see plenty of free road ahead, and never on a curve or a hill or near street intersections —the driver on your right may decide to turn left. Before pulling out to pass, they look to make sure that the car behind them hasn't started to pass and to notify the driver ahead by a short horn toot. When they pass a vehicle, they don't pull back in the right traffic line until the vehicle is at a safe distance behind.

7. PEDESTRIANS: Truck drivers have learned that, all too often the reason pedestrians are killed or seriously injured in traffic accidents is that the driver has not given them the right of way at crosswalks or been alert for them when they "jay walked." A truck driver knows that grown ups as well as children can come bounding out of the wrong side of parked cars.

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Hot Rodders Aid Police

Far from being a menace, hot rods are a constructive element in American life, according to the president of the National Hot Rod Association, Wally Parks.

"Speed in itself is not evil," he says. "In organized speed events, conducted under safe, supervised auspices, hot rod races provide the zest for competition that young Americans want." Mr. Parks says accomplishments of organized hot rodders in California, Texas, New York and Ohio prove his contention. In these areas, he said "it has been demonstrated that an 18-year-old, working on his car night after night in his garage at home, is not really so much of a social problem as the 18-year-old who spends his idle hours in pool rooms or loafing around street corners."

Police Chief Ralph Parker, of Pomona, Calif., explains Pomona's peace and safety was threatened by youngsters racing "souped-up" hot rods through the city streets. The police department hit them with

every law and ordinance on the books but to no avail.

"Then using a page from the psychologist's book, we decided to join them in an attempt to channel their enthusiasm and bring them around to an orderly approach in practicing their hot rod sport," Chief Parker says. A traffic officer who was a racing enthusiast himself was appointed liaison officer between the police department and the hot rodders. An abandoned air field was taken over as a hot rod race track. An extensive safety program was begun together with other interest-developing activities such as time runs, planned group tours and secret destination runs.

"To stimulate interest further, an activity chart was set up to bring out the competitive spirit," Chief Parker says. "A point system was established so that hot rod club members could gain or lose points according to their degree of participation in the program. The activity chart and point system were largely instrumental in decreasing the number of citations issued to hot rodders and complaints received. The hot rodders have become a forceful group for the promoting of a sound safety program throughout the community. Their spirit and desire to be helpful have accrued to the benefit of everyone."

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(For farther details, use Key # O-40 on free Inquiry Card on page 75)

Air Underground

(Continued from page 31)

manhole also adds to discomfort. For example, when working with solder—and making a big joint may require 30 to 40 pounds of hot solder—the manhole is warmed a little more. Even though the solder actually is heated outside the manhole, and passed down to the man inside as he needs it, the work involves continuous application of hot solder.

Ventilation Techniques

If a manhole is to be ventilated before anyone descends to work inside, the nozzle of a portable blower is often aimed down through the opening to cool or air out the working area quickly. However, when men are already inside, and it's hot and they're sweating, that much of a direct draft blowing down on them could cause stiff necks, aches and pains the next day. The procedure then is to use the blower's canvas sleeve, fastening the end of it down in one corner of the manhole to achieve an indirect air circulating effect.

The result is much like opening a window a little from the top and bottom to get circulation without a big draft. Fresh or cool air is brought in at the bottom of the manhole, ventilating it and driving hot air or fumes out the top, and nobody goes home sneezing.

Picture by courtesy of Consolidated Edison Company of New York, Inc.

Tips for Eye Care

(Continued from page 44)

and proper lighting for reading in bed.

2. See an optometrist or ophthalmologist at least once every two years.

3. Protect your eyes, if you work at a hazardous job or hobby, by wearing safety glasses with hardened lenses.

4. Don't let your children play with dangerous toys. Remember that 67 per cent of all eye injuries to youngsters occur during unsupervised play.

5. Never rub your eyes with your hands, or touch them with anything that is not clean. A cinder or other particle in the eye calls for the skilled hand of an eye doctor.

6. If you spend much time in strong sunlight, wear a good type of sunglasses. Imperfect sunglasses can be an expensive bargain.

7. Interrupt close work every half hour or so and rest your eyes by looking into the distance for a minute or two.

8. Above all, try to maintain a good level of general health. Squinting, chronic eye fatigue, persistent headaches, blurring of vision or inflammation of the eyes or lids are danger signs. Heed them and seek professional eye care as soon as possible.

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(For further details, use Key # O-41 on free Inquiry Card on page 75)

What's New . . .

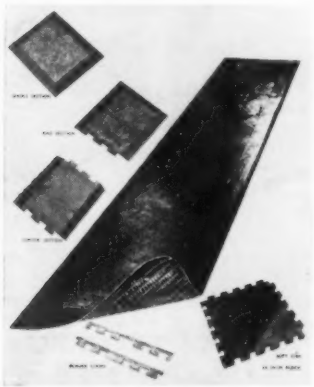
For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

NON-IRRITATING SKIN CLEANSER

(Use Key # 917 on Inquiry Card on page 75)

AN INDUSTRIAL skin cleanser which carries the seal of acceptance of the American Medical Association is announced by the Lightfoot Schultz Co. The corn meal that is used carries the government classification of being edible and it has been degerminated to prevent infestation. The other ingredients are compounded with the corn meal scrubbing agent so as to be non-irritating to the skin and yet give an efficient and economical skin cleanser to both men and women.



RUBBER FOOT MATTING

(Use Key # 918 on Inquiry Card on page 75)

NOW available with waffle designed bottom offering thousands of buoyant air pockets for relief of foot and leg fatigue, a new product known as Air Strip is offered by the R. L. Mitchell Rubber Company.

Several sizes and shapes are available. A 28" wide x 36" long x ½" thick type, as a complete single mat beveled at the edges on all four sides, a 28" x 36" x ½" thick mat in sections which interlock (ends and centerpieces of any desired length in multiples of 3 feet), and a solid form without air pockets for areas in which limited weight supply carts might be in use, are all obtainable. The interlocking form is manufactured in black, blue, red and green for regular service and also in black only for services requiring resistance to oil, grease, chemicals, and acids. Also available in black, are 24" x 24" x ½" interlocking (on all 4 sides) blocks with either the waffle pattern bottom or solid construction, to accommodate any floor area. This item is identified as the 24" Rubberlock.

EXTINGUISHER SAFETY CHECK

(Use Key # 919 on Inquiry Card on page 75)

A NEW fire safety device which continuously indicates whether CO_2 fire extinguishers are full or empty and cuts maintenance expense has been introduced by Mel-Rod Manufacturing Co.

Known as the Silent Sentry, the device serves as both a mounting bracket and continuous weigher for all standard CO_2 fire extinguishers. A collar, included with the unit, fastens around the neck of the bottle permanently and permits instant use of the extinguisher. Because the device shows the condition of the extinguisher at all times, it eliminates the element of danger present between periodic manual checks. In addition, the indicator does away with the expense of manual inspection and weighing. When the fully charged bottle of CO_2 is placed on the indicator, the device is adjusted to an index mark with an ordinary screw driver. After this adjustment the unit is sealed against tampering. The indicator will then constantly mark the content of the bottle as "full-to-empty." There are no parts to wear out or require service. The unit is finished in fire engine red for easy identification.

HYDROCYANIC GAS TESTER

(Use Key # 920 on Inquiry Card on page 75)

A NEW instrument for quick, convenient testing of the immediate atmosphere for hydrocyanic acid gas is announced by Mine Safety Appliances Company. Regular use of the "MSA Hydrocyanic Acid Gas Detector," the announcement says, protects personnel against unnecessary exposure to toxic concentrations of HCN.

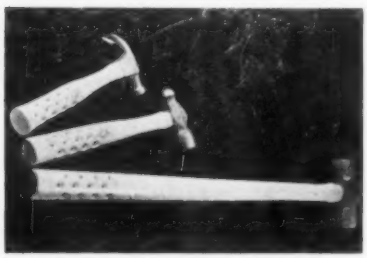
A quick reading is easily made by squeezing the aspirator bulb 3 times to draw in an adequate air sample. Any HCN present turns to blue the white granules of the reagent in the detector tube, beginning at the end where the air sample enters. The length of travel of this coloration increases with the percentage of HCN in the air. Concentrations from 0 to 50 parts per million may be read on the graduated scale of the detector tube. A leather kit with shoulder strap contains everything necessary for making 12 separate tests. In addition to the detector, the kit contains a tube rack, mixing bottle, mandrel, color scale, 12 glass tubes with rubber caps, two vials of the granular reagent, and glass-cloth swatches. Twelve tubes can be filled at one time and stored one week at temperatures of 90°F.; for two to three weeks at 70°F., and two months at 40°F. without loss of sensitivity. Kit items may be economically replaced as separate units, as needed. Sampling hose 10 or 25 or 50 feet long is available with the instrument.

VISORED SAFETY SPECTACLES

(Use Key # 921 on Inquiry Card on page 75)

NEW shatterproof, multi-purpose safety spectacles, called "Visor-Tuc" Eye Savers, and said to give almost 100 percent protection from eye injuries while weighing just over an ounce, are announced by Watchemoket Optical Co.

Over-eyes protection from glare and flying particles is provided by the built-in visor, an extension of the frame, shaped to fit snugly against the wearer's forehead. Injury from side or bottom is prevented by "semi-cup" lenses, so called because of lens-flanges extending from the lenses toward the cheek. The spectacles are made in a single frame style that fits all workers. This feature is made possible by a Universal nosepiece which rests lightly on the nose and by Retrax Temples which can be adjusted instantly by each wearer to suit the shape of his face—long or short, wide or narrow. Shatterproof, methacrylate lenses can be replaced in an instant—easily removed and inserted by the wearer, yet securely locked in place. Lenses are optically correct to prevent eye strain and permanent injury resulting from distortion of the image. They are available in clear and 3 shades of green: light, medium and dark.



VACUUM GRIP HANDLES

(Use Key # 922 on Inquiry Card on page 75)

THE safety tool division of Ampco Metal, Inc. has analyzed tools for causes of accidental injuries relative to the function of the tools themselves. This analysis reveals that a good percentage of injuries are caused by "striking tools" such as hammers, sledges, etc., which often slip from the worker's hand and either injure him or persons near by. After various tests and revisions were performed on newly designed handles, the final solution involved numerous conical impressions on the handle causing a vacuum as the palm of the hand made a firm contact. Consequently, the slipping problem was minimized even with oily or greasy hands.

The vacuum grip has other features. It helps protect the hands from excessive perspiration and the forming of blisters. Tests show that this new type handle actually massages away many existing hand callouses. If a smooth handle is grasped firmly for a few seconds and the grasp released quickly—the palm of the hand is white—showing that the blood has been driven from the surface of the skin. However, when a vacuum grip handle is grasped as firmly and released as quickly, the places of the vacuum cups are revealed in the form of red dots. Hence, as the grasp shifts in working, blood is permitted to nourish the skin in the palm of the hand preventing the formation of callouses. The handle is made of select grades of hickory, and is thoroughly seasoned prior to assembly to eliminate the possibility of shrinking or warping.

The tools which incorporate the vacuum grip handles are: Ball peen or machinists' hammers, bricklayers' hammer, claw hammers, coopers' hammers, cross peen engineers' hammers, cutoff hammers, double face engineers' hammers, double face machinists' hammers, scaling hammers, sledge hammers, tack hammer, hatchet, mallets, axe, backing-out tool, guncotton or nitrocellulose forks, hay fork, manure fork, garden hoes, planters' hoe, tapered mauls, mop holder, rake, rivet buster, long blade scrapers, short blade scrapers, floor scrapers.

AUXILIARY LIGHTS

(Use Key # 923 on Inquiry Card on page 75)

TWO auxiliary lighting units approved by Underwriters Laboratories are available in a new and completely redesigned line of 6-volt emergency lighting equipment, according to a recent announcement by The Electric Storage Battery Company. Both units, known as Exide Lightguard Models M and T, conform fully to the recently revised National Electrical Code. The new units include recently developed features that increase efficiency and service life. They can be used in such locations as factories, office buildings, banks, and warehouses, because of the unit's dependability, ease of maintenance and trouble-free service. Each new model is furnished with one 25-watt sealed beam lamp, but is available with 2 if desired. Lamps are adjustable to provide light in any direction. Depending upon local conditions, each lamp will illuminate up to 10,000 square feet.

In the event of power failure, the one-lamp unit of both models will furnish more than 8 hours of uninterrupted emergency lighting. Two-lamp units will furnish light continuously more than 3 hours. A highly shock resistant transparent plastic container shows each battery plate clearly, providing essential battery protection coupled with easy battery inspection. Under normal circumstances, batteries in both models are kept fully charged from the normal a-c supply by means of a built-in trickle charger, since units are always plugged into an electrical outlet. In an a-c power failure, an electrically actuated relay automatically closes to provide emergency lighting. When normal power is restored, the relay turns off the floodlights, and charging is automatically resumed. Should an emergency require a portable floodlight, the unit may be disconnected and moved to another location. When the line plug is disconnected the lamps light automatically and may be controlled manually by a toggle switch on the front panel. All models are equipped with neon pilot lights which indicate when the units are ready for emergency lighting service. Certain models are so designed that the lamps may be removed from the unit and mounted remotely.

STEEL-CAPPED GLOVE

(Use Key # 924 on Inquiry Card on page 75)

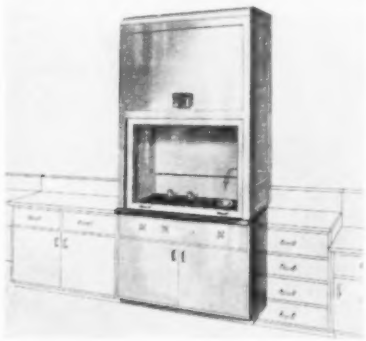
A NEW safety glove that uses the steel box principle employed in safety shoes to provide protection from smashed fingers, is announced by Wolverine Shoe and Tanning Corp. According to the manufacturer, the glove is light in weight and so designed that the safety tips do not interfere with complete hand freedom. The glove is known as the Free Touch Armortip Safety Glove.

A tempered carbon steel cap is cemented into the tips of 3 fingers on each hand. Compression tests made on these steel boxes have shown that each tip resists a pressure of 2 tons. As an aid to safety supervision the gloves are distinctive green sueded pigskin, marked with a large label across the back. Also, the tips of the first, second and third fingers are punched so that the steel tips are visible. The gloves are made in both safety cuff and gauntlet styles.

FUME HOOD

(Use Key # 925 on Inquiry Card on page 75)

SAFETY has become a top-priority concern of the nation's laboratories in the past two decades. Its latest effect on laboratory design is visible in a fume hood with extended controls now available as a standard unit of the Fisher Scientific Company's line of "unitized" laboratory furniture. By means of the Extended-Control Fume Hood any normal hood service can be started and stopped, and its rate adjusted without opening the window. Should the laboratorian desire to slow the heating rate of a burner in a potentially dangerous reaction, or protect a delicate reaction from drafts, he leaves the protecting safety-glass window down, turns the gas control knob from the outside. No longer need he insert his head and shoulders into a hood filled with



toxic or hazardous fumes—he controls the water rate (or air or vacuum or gas) with a control on the front panel.

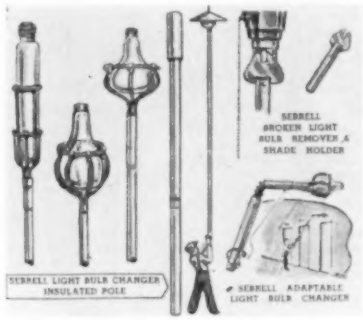
The new hood has a roomy cupboard base for storage, with a full-depth adjustable metal shelf. To permit laboratory personnel the maximum in fume-hood working space (in itself a safety measure) the new fume hood features the deck-mounting of services at the rear of a 4-foot by 30-inch top. This gives the worker almost 336 square inches of additional space to that found in the conventional top with a reagent shelf, the manufacturer states. The top is uniquely resistant to the localized heating found in fume hoods by virtue of its grainless structure. (Hence; no lines of fracture.) In addition it is treated with a chemically-resistant finish. A variety of extended-control service accessories gives the chemist a wide choice in his fume hood arrangements. Among these is an extended-control single faucet and cup sink for deck mounting, permitting an aspirator to be used on the adjacent faucet. Extended-control single cocks are also available for air, gas and vacuum. The new fume hood is complete in itself, with its own side walls and back.

FIRE RESISTANT PAINT

(Use Key # 926 on Inquiry Card on page 75)

THE recent development of Fyr-Kote, a new fire retardant paint is announced by the Morris Paint and Varnish Co. The paint is applied as easily and economically as ordinary interior paint, and in decorative colors over any interior surface including the most combustible, states the manufacturer.

When exposed to flame the paint pours out carbon dioxide and calcium chloride which smothers fire and retards the spread of flame on the surface. This oil base fire retardant interior flat wall paint has been listed by Underwriters Laboratories. It also passes applicable Federal Specifications and U. S. Engineers' tests. The product is extremely washable, easy to apply, economical, solid-covering and long lasting.


SEBRELL BROKEN LIGHT BULB REMOVER & SHADE HOLDER
SEBRELL LIGHT BULB CHANGER INSULATED POLE
SEBRELL ADAPTABLE LIGHT BULB CHANGER

LIGHT BULB CHANGER

(Use Key # 927 on Inquiry Card on page 75)

NO LONGER is it necessary to climb ladders to change light bulbs, says the J. B. Sebrell Corporation of Los Angeles. With the company's light bulb changers, a person can remain on the ground and change bulbs, even broken ones, that are 42 feet and more above the floor. By using lightweight aluminum sectional poles with the proper bulb changer attachment on the end, various lengths of poles can be made to change bulbs at varying heights. Inserting the unexpanded end of one pole into the expanded end of another, enables a maintenance man to build any desired length of pole. The changer attachment can be easily and quickly attached to the end.

Attachments are available for bulbs from 15-watt to 1500-watt and for various shapes. An angle adjustment can be added to allow bulbs at any angle to be changed. For broken light bulbs a broken light bulb remover, which fits both standard and mogul lamp bases, can be used. As an added protection, an insulated 5-foot pole section is available for use with other regular sections of aluminum poles. This protects the user from any electrical current transmitted through the aluminum poles.

ANTI-STATIC FLUID

(Use Key # 928 on Inquiry Card on page 75)

A NEW and improved method of static spark prevention has been developed by Parlee Co. It is known that static electricity is created on non-conductive surfaces, and increases its voltage until it can jump or "spark" to a near conductive area. It is when this spark jumps that it becomes a nuisance or a fire hazard.

By the use of a new chemical fluid, Anti-Static, a conductive film can be applied over non-conductive surfaces, to carry away the static charges as fast as they are created. This film is colorless, odorless, water and oil resistant, and can be applied or removed easily.

BURN SPRAY KIT

(Use Key # 929 on Inquiry Card on page 75)

THE MEDICAL SUPPLY COMPANY announces a new way to economically combine burn spray first aid requirements with standard unit type first aid kits. The company offers a practical and highly efficient burn spray first aid packet, containing a spray gun and ten $\frac{2}{5}$ ounce refill cartridges containing the burn first aid solution. These packets will fit into any size unit type first aid kit, requiring 6 unit spaces. Also, it may be used as an individual unit in itself, for which a special carrying case has been designed.

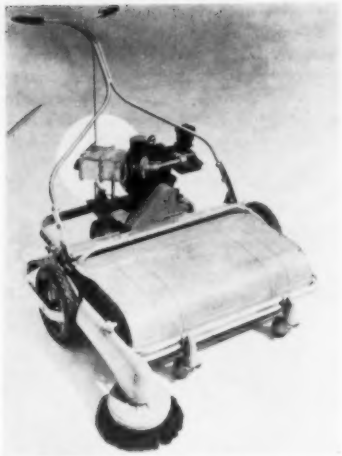
The spray gun is ready for operation merely by loosening the bottom cap, inserting a pressure cartridge, tightening the cap, and pressing the trigger. The spray gun is molded to fit the hand for ease of operation, it is permanent equipment, and refill cartridges may be obtained to keep the packet complete at all times. Each $\frac{2}{5}$ ounce cartridge will afford excellent coverage for approximately 144 square inches of burned area. This new spray packet is sanitary to use, easy to operate, in addition to being fast and painless in its method of spray application. It is available with either Americaine or Kip Antiseptic Oil, and laboratory facilities are available to determine the adaptability of other burn first aid solutions to this unique spray dispenser.

SMOKE ODOR SERVICE

(Use Key # 930 on Inquiry Card on page 75)

SMOKE ODOR SERVICE, a service which removes odors of smoke from goods exposed to fire, has expanded according to an announcement by Airkem, Inc.

Due to the highly complex techniques required, the firm has been the only national organization available for this purpose. What is commonly referred to as a smoke odor is actually a complex of a great many odors, depending on the materials which have burned or been charred. Special counteractants must be used to remove each of these odors.



CATALYTIC SWEEPER EXHAUST

(Use Key # 931 on Inquiry Card on page 75)

COMPANIES with large areas to be swept, where mechanical floor sweeping is indicated as being the most economical method available, now can employ a motorized sweeper without endangering their employees through harmful exhaust fumes. Pictured above is a Parker Industrial sweeper with a catalytic exhaust attachment which accomplishes the job. The attachment, developed and thoroughly laboratory tested by Oxy-Catalyst, Inc., can be seen as a box located where the muffler usually is found on light gasoline engines.

Thorough testing has shown the catalyst to reduce dangerous carbon monoxide to a ratio of 0.0 at both idling and governed speeds. This means that a motorized sweeper can be used safely in confined areas. The Parker Sweeper Company is making the attachment available immediately as optional equipment on all motorized sweepers.

SOLVENT EMULSION CLEANER

(Use Key # 932 on Inquiry Card on page 75)

THE PENETONE COMPANY, announces the development of two solvent emulsion cleaners with an extra high flash point of 250°F. Both products have a constant high flash point, that will not vary, even when heated. These solvent base products, so necessary for the removal of heavy greases and oils do not sacrifice fire safety for cleaning efficiency. The dual requirements of efficient maintenance and production degreasing and an extra margin of fire safety have been met with these products which are safe to use on aluminum and other soft metals.

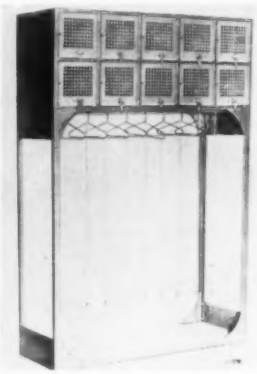
Navee '53 is an extra-heavy duty degreaser for removing hardened, oxydized and burned-on oils and grease. It also removes carbon stains, preservative coatings, lead oxide, packing greases, asphalt tar, resins, printers inks, etc. Mixed with 5 to 10 parts water, it is both economical and efficient.

Hi-Flash is an industrial degreaser designed to remove drawing, cutting and lubricating oils, buffing and polishing rouges from metal parts in the process of manufacture.

INDUSTRIAL HEALTH SERVICES

(Use Key # 933 on Inquiry Card on page 75)

EMMET TECHNICAL ASSOCIATES offer a broad integrated program of laboratory, inspectional, and consultative services in the related fields of industrial hygiene and toxicology, safety, and sanitation. Such services are available on a professional basis and include the initiation, development, supervision, and evaluation of plant programs in these areas. Provision of data and design for protective equipment and installations are also available.



LOCKER RACK

(Use Key # 934 on Inquiry Card on page 75)

THIS clothes storage unit accommodates 10 persons. It is completely portable, fits limited space, and is low in cost, according to the manufacturer Lyon Metal Products, Inc.

Coat is secured by dropping chain through sleeve, and then locking chain in position in slot in door. Doors drop shut from top. Each door equipped with built-in lock, 2 keys. Raised base keeps clothing and overshoes off floor. The unit is 50" wide, 18" deep, 76" high.

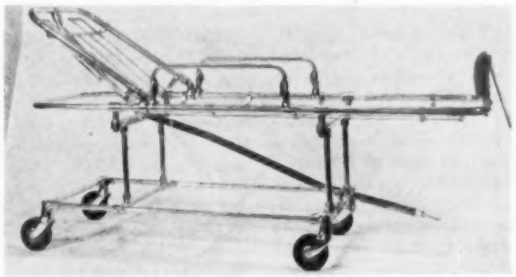
PAPER WORK CAPS

(Use Key # 935 on Inquiry Card on page 75)

A DISPOSABLE paper work cap developed by E. I. Du Pont De Nemours & Co., for use in one of the company's large chemical plants is now being offered nationally by an eastern industrial supply concern. The caps, made of heavy paper which has been treated with neoprene synthetic rubber, were adopted after exhaustive service trials under severe plant conditions.

A prime advantage is the economy of the cap. It costs a third less than cloth caps, is water repellent, and comes pretreated with a flame retardant. It does not collect dust readily, is light in weight, yet is substantial and holds its shape well. The new cap owes its durability to the paper's neoprene content. A small percentage of neoprene latex added to the pulp during the paper-making process gives the finished paper unusually high

wet strength. It resists both acids and alkalies. In appearance, the paper caps follow conventional work cap lines and are sewn like cloth caps. There is a leatherette sweat band around the inside and a reinforced visor with cloth piping around the edge.



ELEVATING STRETCHER COT

(Use Key # 936 on Inquiry Card on page 75)

AN ELEVATING cot for handling any sick or injured patient has recently been introduced by the Washington Mortuary Supply Company, manufacturers of stretcher equipment. This elevating cot is 12" from the floor to bed when it is in its lowered position, making it easy to place a patient on it from the floor or ground. Elevated to its higher position, a patient can remain on the cot at a convenient height for the doctor and those administering medical aid.

Quickly and easily elevated, the cot automatically locks into high position. There is nothing to get out of adjustment, according to the manufacturer. Made of polished duraluminum tubing, it is strong and light. The cot measures 75" outside length and 22" outside width for the standard senior size, although other sizes are available. The side rails turn down and the foot rest folds over so that it does not require any more room than a step ladder to store. Sponge, cotton, paratex leather-covered pads are also available for this cot.

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

PERSONAL PROTECTION

Neoprene Gloves 289

The Pioneer Rubber Co. A line of liquid-tight industrial gloves, all-neoprene, neoprene coated, and vinyl coated is illustrated and described in this 26-page catalog. Features claimed for the gloves include durability, no irritation to the skin, imperviousness to oils, acids, and caustics. Aprons and the proper selection of industrial gloves are other sections emphasized.

Plastic Safety Lens 290

Welsh Manufacturing Co. This 1-page, 2-color bulletin details and pictures the company's new plastic safety spectacle lens. The lens is said to weigh less than half of a similar glass lens, resist scratching, pitting, and abrasion, and to exceed standard tests for impact, piercing and visible transmission.

Safety Shoes 291

Charles Chester Shoe Co. Illustrated in several colors, this 8-page catalog discusses several types of safety shoes. Included are rubber, oxford, dress, boot, and high shoe varieties. Emphasis is laid on air cushion soles, neoprene and cork soles, as well as on dress styles of safety shoes. Steel toe construction and a safety shoe plan are also diagrammed and detailed.

Plastic Lenses 292

McLeod Optical Co., Inc. An 8-page brochure, describing the ophthalmic properties of a line of plastic lenses, this literature discusses the results of tests for transmission of light, resistance to abrasion, resistance to impact, and resistance to heat and humidity. Photographs illustrate charted results.

Safety Belts 293

Whitner-Chicago Co. Detailed illustrations with explanations keyed to each important feature of window cleaners' safety belts and anchors are the central features of this 4-page folder. Diagrams and specifications are also included.

FIRE PREVENTION

Sprinkler Extinguisher 294

Stop-Fire, Inc. This 2-page bulletin describes the company's automatic sprinkler fire extinguishers. The units are designed to permit quick and economical installation of fire protection directly over fire hazards, requiring only a hook in the ceiling and no piping. Operation and construction of the stored pressure, vaporizing liquid extinguishers of 1-gallon capacity are diagrammed and explained.

Cartridge-Operated Extinguishers 295

Badger Fire Extinguisher Co. Water-filled extinguishers actuated by CO_2 cartridges are the subject of this 4-page, 2-color bulletin. Conversion units to change soda-acid extinguishers to this type of extinguisher are also featured. An anti-freeze compound to keep the water usable to 40 degrees below zero is also available. The economy and ease of maintenance and operation of the new extinguishers are emphasized.

Accessory Fire Protection Equipment.. 296

The Fyr-Fyter Co. This 66-page catalog illustrates and describes more than 475 accessory fire protection pieces of equipment indexed for easy reference. Items include nozzles, valves, hose, hose fitting and accessories, pumps, firemen's tools and clothing, ladders, warning and signal devices, first aid kits, oxygen and air masks, breathing apparatus and safety equipment.

Flame Failure Safeguard 297

Combustion Control Corp. Composed of two 8-page bulletins, this literature, diagrams and discusses the installation of electrical scanners to prevent flame failure on automatic, semi-automatic and manually ignited gas, oil and combination burners. The control not only shuts off fuel on flame failure but also shuts off fuel if there is a failure within the control itself.

BUILDING MAINTENANCE

Scaffolding System 298

Brainard Steel Div. Construction, use, and applications of a scaffolding system that has one basic part and requires no nuts, bolts, pins or tools for erection are detailed and pictured in this 4-page, 2-color bulletin. Safety and speed of assembly are emphasized as well as versatility of uses.

Protective Tar Coatings 299

Pittsburgh Coke & Chemical Co. A series of cold-applied tar base coatings for protecting metal, masonry, stone and brick against corrosive conditions is covered in this 8-page brochure. Application directions, guides for proper coating to be used, and composition of the coatings are given. Protection against differing temperature, humidity and hazard conditions is offered.

Scaffolding and Hoist Tower 300

Advance Scaffold Div. Three 6-page folders, this literature deals with rolling and tubular scaffolding as well as a hoisting tower. The tubular scaffolding, of different size units, is interchangeable and can be put together easily without special attachment accessories. The traveling scaffold has a brace locking feature and can be erected of the tubular units. The hoist tower can also be constructed of these units with simple additions.

MEDICAL & SANITATION AIDS

Cutting Oil Sanitation 301

The C. B. Dolge Co. Beginning with a discussion of sanitation of coolants, health and dermatitis hazards in handling coolants, and classification of coolants, this 28-page booklet then turns to describing disinfectants for cutting oils, analysis of the oils, germicides, prophylactic cleaners, and protective cream for use against the hazard. The literature is fully detailed and illustrated.

Washroom Advisory Service 302

Scott Paper Co. This multi-colored 32-page brochure discusses a washroom service and illustrates the company's products for washroom use. Featured are design of washrooms for special uses, traffic flow, supply closets, fixtures, towels and tissues. Many variations on each of these topics are shown and detailed.

Soapless Cleanser 303

Huntington Laboratories, Inc. A liquid synthetic detergent for use on walls, floors, skin, rubber, metal and enamel surfaces is the subject of this 6-page folder. A concentrate, the cleanser is said to remove heavy soil even when used in cold, hard water. Rinsing is easy or unnecessary depending on the surface.

Liquid Bowl Cleaner 304

Abco, Inc. This 1-page, 2-color bulletin is devoted to a liquid bowl cleaner which dissolves slime, grease, rust, scale and lime stains, penetrates pipes, kills algae, and cleans fixtures with non-fuming chemical action. It is easy to use and safe according to the literature.

Incinerator 305

Winnen Incinerator Co. A commercial-industrial incinerator which burns both wet and dry refuse is discussed in this 4-page folder. It is said to consume 400 pounds an hour, and various accessories to increase ease and rapidity of operation are pictured and explained.

MATERIALS-HANDLING EQUIPMENT

Rope Use 306

Plymouth Cordage Co. A 4-page brochure on the proper selection, use, care and safety precautions when rope is used in materials-handling, this literature also illustrates and describes the company's rope for stormline, hotline and barrier uses. How to check rope for wear, how to reeve tackle, how to splice correctly, and how to load slings safely are also covered in this Best's Safety and Maintenance Directory folder.

Unbreakable Carboys 307

Plax Corp. This illustrated 8-page brochure is designed to acquaint packagers, handlers and users of liquids with the advantages of unbreakable polyethylene carboys. Specifications for both jacketed and unjacketed types emphasize safety, light weight, low costs, and ability to handle corrosive liquids. Sketches and photos highlight use and safety features.

Hydraulic Equipment 308

Templeton, Kenly & Co. Application pictures, construction charts, and accessory and attachment

(Continued on next page)

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illustrations are used in this 12-page booklet to explain the use of the company's hydraulic equipment. Featured are pumps, rams, jacks, pullers, etc. The booklet stresses time and cost savings offered by the equipment.

MISCELLANEOUS

Fume Exhausters 309

Torit Mfg. Co. Several types of exhausters to remove fumes, odors, smoke and gases from operations such as welding, galvanizing, solderizing and metallizing are illustrated and detailed in this 2-page, 2-color bulletin. The portable units can be attached with flexible metal or rubber tubing. Also covered are accessories available from the company such as hose, hoods, elbows, joints, etc.

Power Press Guards 310

Searjeant Metal Products, Inc. A line of single and double arm sweep guards, non-repeat mechanisms, end zone barrier guards, and basket guards is described and pictured in this 6-page, 2-color brochure. Easy modernization of old presses with the guards is stressed and safety, economy and efficiency are emphasized.

Measuring Equipment 311

General Electric Co. A revised edition of the company's 64-page measuring equipment catalog, this literature contains information on more than 115 testing and measuring devices. Products ranging from simple current indicators to automatic oscillographs; from surface roughness scales to mass spectrometers, and from d-c amplifiers to radiation monitors are included.

Industrial Markers 312

W. H. Brady Co. Chief importance in this 4-page, 2-color bulletin is given an easy, rapid-release coating now available on the company's line of wire-markers, pipe markers, safety signs, stencils, aisle markers, fluid line markers, write-on labels, container markers, and card-mounted masks. The coating allows the label to be peeled from its base easily but does not interfere with its adhesive qualities when applied to a surface.

Safety Tools 313

Beryllium Corp. Examples of a line of non-sparking, corrosive-resistant, and strong tools made of beryllium copper are described and illustrated in this 4-page folder. The tools are designed for use wherever flammable liquids, gases or dusts are processed or handled, or in outdoor use under corrosive conditions.

Safety Solvent 314

Colonial Alloys Co. A non-blended safety solvent, the subject of this 1-page bulletin is said to have no flash point and a high safety toxic factor. It cleans metals, electrical equipment, motors, generators, transformers, wiring, instruments, tools, watch and clock mechanisms, textiles, and fabrics. It dries quickly and can be used in place of carbon tetrachloride, except as a fumigant or in fire extinguishers.

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